

# THE IRON AGE

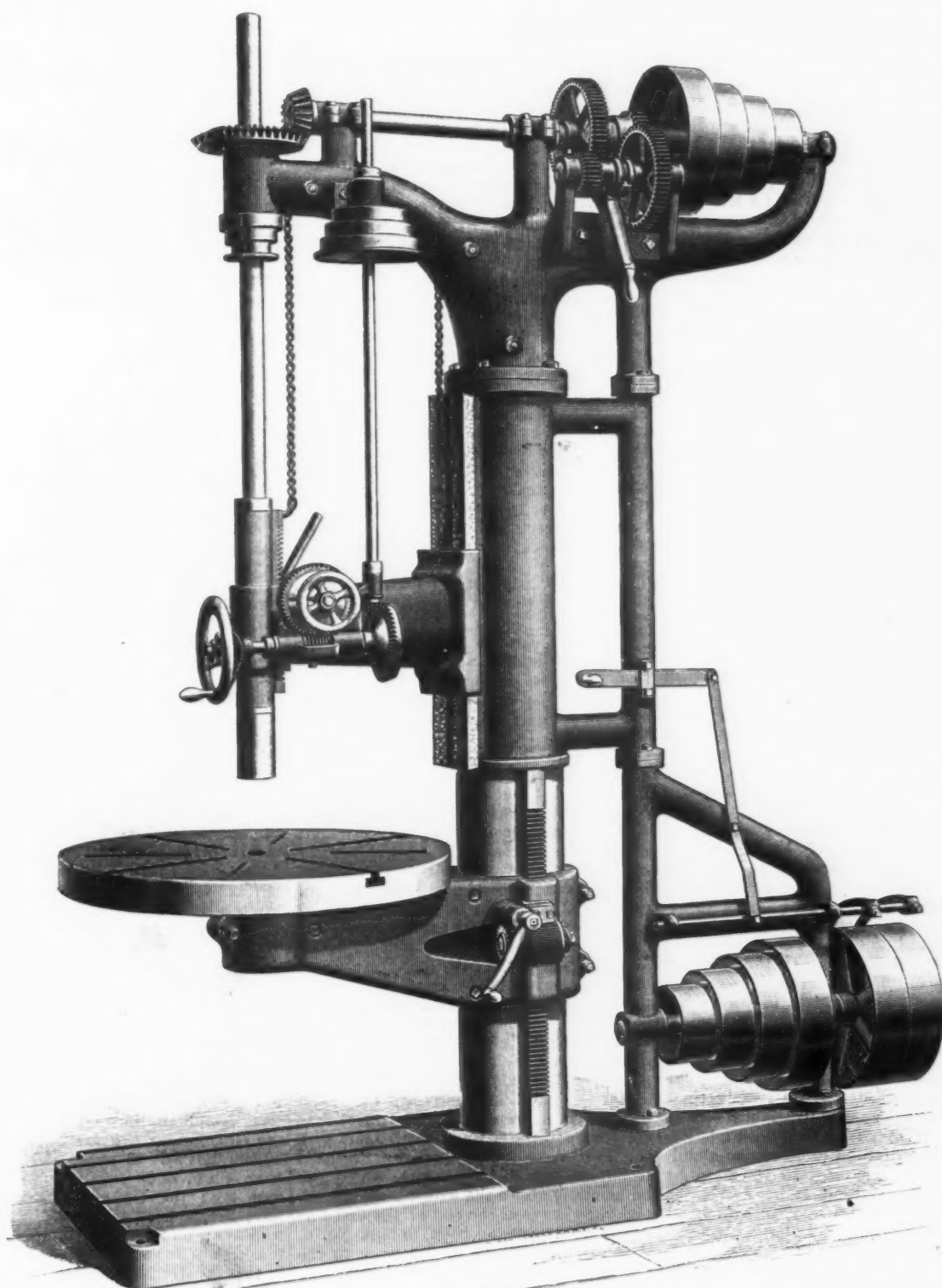
THURSDAY, JUNE 2, 1892.

## New Kerkhoff Upright Drill.

The accompanying engraving represents a new upright drill recently brought out by A. H. Kerkhoff &

large diameter and wide belt surface. The back gears are engaged by a simple lever movement. The spindles are of extra large diameter, and, together with the front arm, are balanced by a weight in the column. The front arm is gibbed to the

how long the machine may have been in use or how much the parts may be worn, when the clamping screws are fastened the spindle will come to its original center. They have hand or automatic feed, with quick return, and are of easy and accu-



NEW KERKHOFF UPRIGHT DRILL.

Co., Cincinnati, Ohio. As shown in the cut, these drills are strongly braced, so as to make them perfectly rigid, and to prevent any spring under the strain of heavy drilling. They are powerfully geared, and fitted with cone pulleys of

face of the column, and arranged to be moved up and down by rack and pinion. The manner of fitting the arm to the column and the clamping device used for fastening will always keep the arm and spindle in perfect alignment. No matter

rate operation. The table is made to turn in the arm, and has four openings for bolts and four T slots for clamping and fastening work. The arm swings around the column, and is raised and lowered by rack and pinion operated by screw gear-

ing. The design of these drills is the result of many years' experience in building and operating this class of machine tool, and the makers believe they will recommend themselves to the mechanical public. Four sizes are made, with 25, 28, 32, and 40-inch swing respectively.

#### Electro-Aluminum Plating at Tacony.

The work of electro-aluminum plating the massive iron castings which are to form the superstructure for the Philadelphia City Hall tower has been inaugurated with complete success at the works of the Tacony Iron and Metal Company at Tacony, Philadelphia. Two of the ponderous 6 ton columns, each 20 feet high, which are to stand round the base of the crowning dome of the tower, have been passed through the electro plating process with the most satisfactory results. The operation, being the first of its kind ever yet undertaken in connection with objects of such magnitude, was naturally regarded by persons who are interested in the subject of aluminum plating as more or less of an experiment, although those immediately concerned in the present attempt were entirely satisfied of their ability to bring it to a successful issue, and their confidence appears to have been fully justified by the result. The plated columns are now lying in the company's yard at Tacony, where they have been inspected by numerous gentlemen interested in the new venture in electro-aluminum plating, including the architect of the Philadelphia public buildings, and all have expressed their unqualified approval of the success of the first attempt to deposit an aluminum plating on such large surfaces.

It should be understood that the aluminum coating will not present a bright or burnished surface, but the columns will remain in the same state in which they issue from the bath—that is, with a "matt," or dead finish, which will accord harmoniously with the white marble of which the pether portion of the tower shaft and the mass of the building below are built; so that the one material will be practically indistinguishable from the other at the distance from which it will ordinarily be viewed.

The new electro-plating works have been in active operation for about three weeks, and the preliminaries were so carefully worked out and arranged by the officials of the company and J. D. Darling, the superintendent of this department, that few or no hitches or hindrances were experienced from the commencement to the finish of the first venture. The two columns already passed through the process occupied nine days in finishing, but the operation will be carried throughout with considerably greater celerity as time goes on and increased experience is gained. The system, as carried out in the castings above mentioned, and which is now seen in operation at Tacony, is as follows:

The object required to be electro-aluminum plated is carried into the shop by means of an overhead trolley. On the floor of the building into which it is introduced are six large wooden tanks in two parallel rows, each tank lying in a separate cemented pit on a level with the ground. These tanks are each 28 feet long, 5 feet wide and 8 feet deep, of sufficient capacity to receive the largest castings required in the present case. The object is deposited in the first of these, which contains a solution of caustic soda, in which it is allowed to remain 24 hours, being thoroughly cleaned of all grease. Thence it is removed to the second tank, where it undergoes a pickling for the removal of scale and oxide, remaining there for another 24 hours. On being taken out the casting

is thoroughly cleaned by hand with steel scratch brushes, preparatory to being placed for a further period of 24 hours in tank No. 3, where it receives a primary deposit of copper. In the fourth tank, to which it is then removed, an immersion of 72 hours imparts to it a very heavy copper deposit. The casting is now ready to receive a final electro-plating, this time of aluminum, in tank No. 5. Here it also rests for 72 hours, an even coating of  $\frac{1}{16}$  inch of that metal being superposed on the copper. About 50 pounds of aluminum are absorbed by each column. The last tank contains hot water, in which the casting is allowed to remain just long enough to be thoroughly washed, which completes the process. This has taken nine days, but a regular procession of columns or other articles is meanwhile passing through the tanks, so that a finished piece is taken out every third day, and this period will doubtless be curtailed when the work has been a little longer under way, when it may be found that a shorter immersion will be equally effective. It should be mentioned that while in the tanks the castings are turned every two hours night and day.

The aluminum anodes used are each 4 feet long, 12 inches wide and  $\frac{1}{4}$  inch thick, weighing 35 pounds, 60 of them being suspended round the interior of the tank. The necessary electric current for the plating tank is supplied by four large dynamos. The plant in this shop is shortly to be increased by the addition of two smaller tanks, 12 x 8 feet in dimensions, for plating the smaller castings, such as the detached ornaments for the Corinthian capitals of the columns, &c. Some very beautiful specimens of castings with copper, aluminum, bronze and pure aluminum plating were to be seen lately at the Tacony establishment, all highly finished and showing what it is possible to do in that line.

The total surface to be plated for the public buildings is about 100,000 square feet. Of this the heaviest work will, of course, be the columns above mentioned and the pilasters which will back them on the tower. There will be 16 of each of these. When in its place each column will stand on another shorter one, to which it will be bolted, but as these latter are to be covered by an ornamental pediment which will hide them from view, they will only receive a heavy coating of copper as a protection from rust. The first two columns having been successfully operated upon, no more of them will be plated at present until all of the pilasters have been finished, as they will be required for placing in position first. All the cast-iron sheathing for the dome and metal superstructure of the tower will be passed through the tanks as speedily as possible, such parts as are first required to be placed having the precedence, so that the work of completion may go on regularly at the tower itself.

The system of handling the castings and moving them from tank to tank is very efficient, and the work is carried out with the greatest facility by means of overhead trolleys attached to I-beams, which run horizontally above the baths, a cross track making a curve at the end of the first line of three, and passing back to tank No. 6, which is placed near the entrance to the building by the side of the first tank.

The work on the statuary in the bronze department is progressing rapidly and satisfactorily. A foundation on which each group will be temporarily erected in turn has been laid down in the bronze foundry, and the task of piecing together the various portions, 74 in number, of the statue of William Penn, will be commenced within the next fortnight, all the necessary castings being now nearly ready.

The structural frame work of the uppermost story of the tower is well on toward completion, and already rises high above

its surroundings in the company's yard at Tacony. When complete it will be again taken to pieces and transferred for re-erection on its final destination 547 feet above the pavement in the center of the Quaker City, and will form the greatest structure of its kind yet erected on this side of the Atlantic.

Francis Schumann, the president and general manager of the Tacony Iron and Metal Company, is well known as a thoroughly practical and experienced architectural engineer and to him the credit of this great work is mainly due, his knowledge of iron construction, tensile strengths, wind pressures, &c., having enabled him to overcome all difficulties in the superposition of such immense weight of metal at so great an altitude.

#### Gloomy Outlook for British Trade.

The Board of Trade returns for April, says the *London Iron and Coal Trades Review*, resemble those for March, in that they are of a most unfavorable character, with this difference, however, that they exhibit in a more pronounced degree the decrease in British exports, and that this decline shows no signs of giving place to an improvement. One of the most serious aspects of the present unfavorable Board of Trade returns is that which concerns us most—the heavy and continued falling off in our exports of iron and steel, which has now been going on for the last 12 months, and which was accentuated during April. It is, happily, not very often that we have to tell such a sorry tale as we have on the present occasion, for the depression in the iron and steel export business during the past month is probably without a parallel in the history of the English iron trade. If we except an insignificant increase in unwrought steel, the April iron and steel shipments show a universal decline. For the four months of the present year the total exports were 823,486 tons, against 981,864 tons in the corresponding four months of 1891, while their value was £7,126,633 and £9,089,839 respectively. We have thus a decline, for the four months, in quantity of 158,375 tons, or 16 per cent., and in value of £1,963,206, or 21.6 per cent. But the decrease assumes a much more serious aspect when we take the month of April by itself. The shipments in the past month amounted to 223,518 tons, which, compared with the 287,422 tons shipped in April, 1891, exhibits a drop of no less than 63,904 tons, or 22.26 per cent. in quantity, while their value fell from £2,612,179 in April of last year to £1,835,715 in April of this year, which shows the unparalleled decrease of £776,464, or 29.7 per cent., in a single month.

The heaviest decrease in our foreign shipments last month occurred again under railway material, of which we exported nearly 30,000 tons less, almost half the total decline in the first three months of the year. The Argentine Republic took 42,000 tons less of rails; Peru 5000 tons less; Chili, 6500 tons less; Japan, 4000 tons less; the United States, 3500 tons less; Brazil, 3000 tons less; Egypt, 2000 tons less; and "other countries," 10,000 tons less. But what is far more significant is that Australasia required 23,000 tons less, British East India 13,000 tons less, and British possessions in South Africa 5500 tons less, all countries which formerly gave good orders to our rail mills. It is satisfactory to find that British North America continues a good customer, the shipments thither showing an increase of 4000 tons, while nearly 9000 tons more went to Sweden and Norway. Mexico also took 8000 tons more, and China and Hong Kong 2500 tons more. The next heavy falling off must be attributed to what may be called the retrospective action



of the McKinley tariff. For, although we shipped 14,000 tons less of tin plates to the United States if compared with the shipments of April, 1891, it must be remembered that the first six months of last year were abnormal in their volume, owing to the great rush of plates prior to July 1.

The exports of hardware and cutlery declined by £36,654, or nearly 17 per cent., from £218,055 in April, 1891, to £181,401 last month. The falling off in the shipments of implements and tools amounted to £112,499, against £116,536. The decline was thus £4,037, or 2.6 per cent. The value of machinery and millwork exported was last month £1,358,339, against £1,434,124 in April, 1891, and consequently shows a diminution of £75,785, or nearly 5.3 per cent.

### The Pacific Rolling Mill Company.

From very modest beginnings the Pacific Rolling Mill Company have developed a large plant, the first mill having been purchased early in the sixties, at second hand, at Paterson, N. J. The conditions which determine the operations and the product of the works are somewhat unusual, and have materially been reflected in the plant itself. Working chiefly for the local market, which calls for a large variety of iron and steel articles in relatively small quantities, the works produce a very wide range of shapes and sizes. Formerly they were dependent upon re-rolling scrap, but they have kept pace closely with recent progress, and, beginning the manufacture of open-hearth steel in 1883, enlarged it in 1891. The development of shipbuilding on the Pacific Coast has further extended the range of products, and has added the stringent Government requirements.

The one great and serious drawback to the development of manufacturing in San Francisco generally and to the production of iron particularly is the high cost of coal. That best available for the purpose is the Australian, which, though it is not as good as some of the Northern coals, is cheaper. The cost is largely dependent upon low freights. It has gone as low as \$5.75 per ton, but on an average costs \$7 to \$7.50 per ton. Welsh coke is usually employed for melting in cupolas, the average cost to the works being \$13 to \$13.50, although in this case, too, it has under exceptional circumstances sold as low as \$7. A certain amount of scrap must be imported, the supply of the Coast being inadequate, and it is on the whole cheaper for ordinary requirements to import foreign blooms. The special pig required is generally purchased abroad.

The works are located at Potrero, a suburb of San Francisco, on deep water, having three large docks, affording ample room for the largest vessels. They are equipped with facilities for unloading and storing coal, for receiving raw materials and shipping goods. In the immediate vicinity are the Union Iron Works, with their shops and shipyards.

The steel plant consists of an acid open-hearth furnace, taking a 28,000-pound charge, built in 1883; a small open-hearth furnace, built for experimental purposes, capable of taking 8000 pounds, and now used for steel castings, and a basic open-hearth furnace, taking 30,000-pound charges, built in 1891. These furnaces are served by two 10 ton Wellman cranes, aided by an overhead traveling crane. Eleven Wellman producers in two groups serve the three furnaces. We may note in this connection that California boasts of a deposit of magnesite of exceptionally fine quality, located near Coyote Station, in the vicinity of San José. An analysis showed:

Silicon.....	0.070
Carbonate of lime.....	4.780

Carbonate of iron.....	0.378
Carbonate of magnesia.....	94.583

The product of the open-hearth plant is between 60 and 70 tons a day. The steel is poured from smaller ladles into which previously a charge of ferrosilicon, melted in pots, has been emptied. The Pacific Rolling Mill Company is producing currently a good many steel castings, excellent in quality and finish, and has done some very large work in the way of stern posts, rudder frames, struts, &c., for the United States ships built and building at the Union Iron Works. At the time of the visit of the representative of *The Iron Age* reports of tests made by Government inspectors had just come in. One from the high-pressure piston of the battleship Oregon showed a tensile strength of 70,610 pounds, the Government requirement being 60,000 pounds; an elongation in 2 inches of 33 per cent., the requirement being 20 per cent., while the reduction of area was 47 per cent. On a casting for the crosshead of the Oregon the tensile strength was 82,770 pounds, the requirement being 80,000 pounds, with an elongation in 2 inches of 28 per cent., the requirement being 15 per cent. The casting for a strut gave 60,000 pounds, 29.62 per cent. elongation in 8 inches and 47.12 per cent. reduction of area.

Until the completion of the new blooming mill, a 7-ton Tennant & Walker hammer, with its Siemens heating furnace and crane, was used for hammering ingots. Now the hammer in question, with a 4 ton Ferris & Miles and a 2-ton hammer is employed for making forgings of all sizes, the work for the Government and private ships and for other purposes.

Beyond the hammer plant lies the blooming and rail and beam train, which has now been running for about four months and is modern in every respect. The blooming train is three-high, 28 inch, with tables and manipulator. It has been used to roll down to 2 x 14 inch. It is served by a large 12 x 20 foot Siemens heating furnace of special design, lack of space having led to placing the reversing valves under the furnace. It has a capacity of heating 60 to 65 tons of cold 18-inch ingots per day. A second furnace is to take the place of a set of two older furnaces. Both are to be served by a very large charging apparatus, now approaching completion in the machine shop of the company, designed by P. Noble, superintendent. The blooms delivered by this train are sheared by a hydraulic shear and intensifier, built at the shops of the company. It has a 24 inch blade, and is capable of making a 20 x 10 inch-cut. In line with the blooming train, and driven by the same engine, is the 28-inch finishing train, used for rolling street car and standard rails up to 60 pounds, girder rails, which the company was the first to produce, for the San Francisco cable lines, and I beams up to 20 inch. The mill is employed also on bulbs and other special shapes. It is driven by a compound surface condensing Corliss engine, designed by the engineers of the works. It possesses many features of special interest, and has done good service. It is an excellent adaptation of the Corliss type to the special requirements of rolling mill work. It is worthy of note that the whole of the blooming and rail train and, with the exception of some large castings, the whole of the engine were built in the shops of the Pacific Rolling Mill Company and were designed by Mr. Noble and his staff.

The older part of the works contains a 10-inch guide train driven by an upright engine and served by a Siemens heating furnace of older type. Near it is an 8-inch train, used chiefly for rolling horse-shoe blanks for a company located near the establishment. It is driven by an upright engine, and is supported by a shear to cut

the blanks to length, with a knock-off device for the sheared ends.

Between these trains and the next group is located a tandem compound surface condensing engine, 28 and 32 inches by 36 inches, built by the Golden State and Miners' Iron Works of San Francisco, after the designs of J. F. Thompson, which possesses a number of features of interest. By rope gearing it drives all the machinery in the large machine shop and in other parts of the plant, having proved a very serviceable and economical engine.

A 12-inch merchant and an 18-inch train are driven by the same horizontal engine and are partly served by a Siemens heating furnace very similar in general design to that connected with the blooming train. An 18-inch rail train is used to roll iron beams up to 10 inches, being driven by a 32 inch x 36-inch upright engine. An 18-inch train is used for rolling scrap into bars. These trains are served by a line of 12 direct furnaces with overhead boilers. Along the mill lie a series of 13 Wellman gas producers and one Taylor producer, a boiler plant of 1500 horse-power of "elephant" boilers, a hydraulic pressure pumping plant and accumulator, a very roomy and nicely fitted blacksmith shop, and a fine foundry.

An L in the old mill is partly occupied by a number of chain fires, by a hammer shop for cable and electric-car chairs, &c., and by two rotary planers for Z bars, which were first made at these works in 1884. The company does a good deal of architectural work, having done all the steel work for the Mills and Mutual Life buildings, now ranking among the finest in San Francisco. A very capacious and well-equipped machine shop is employed on new and on repair work.

A large building is given over to the manufacture of spikes, rivets, bolts and nuts, this department having a capacity of 250 boxes of spikes and 100 boxes of rivets per day. There are six bolt headers, four hot pressed nut machines and a large number of cutting and threading machines.

It will be observed that the Pacific Rolling Mill Company, with which P. Noble has been connected 26 years, produces a wide range of articles, making as it does steel castings and forgings, architectural and merchant shapes, beams, channels, angles, Z bars and bulbs, T and girder rails, with chairs, frogs, switches and crossings, bolts spikes and rivets, bridge work, &c. When running full, 1200 men are employed.

A proposition to reduce freight rates on steel rails from Steelton and Scranton, Pa., to various Western points, has been laid before the Western Freight Association. A few of the proposed rates are as follows:

	Per gross ton.
Anderson, Ind.....	\$3.24
Chicago.....	3.60
Cincinnati.....	3.60
Detroit.....	2.81
Mississippi River points.....	4.14
Youngstown, Ohio.....	2.34
Ashland, Ky.....	3.06

The South Side Rapid Transit Railroad Company of Chicago, are figuring on an important extension of their elevated railroad system. A route has been surveyed through an alley from 58th street leading to Englewood, a distance of about one and one-half miles. No steps have yet been taken to raise the money necessary, but there are indications that the subject will receive favorable action at an early date. Work has been resumed on the Lake street elevated railroad, the structural material being furnished by A. & P. Roberts & Co. of the Pencoyd Iron Works, Philadelphia. The officials of the road now hope to be able to push the work of construction without interruption.

## MAKING A BICYCLE.

The wonderful growth of the bicycle trade during the past few years has been caused not so much by the character of usefulness of the machine itself as by the skill and care expended, first in the selection of materials entering the machine, and next in the refined methods used in construction. It is not probable that 5 per

cent. of the thousands of wheelmen have even a vague idea of how the work is carried on in a large bicycle factory, though they know, of course, that in order to produce a machine of this kind unusually accurate methods, combined with machinery of the best design, are absolutely essential in order to turn out the work. It was, therefore, with pleasure that we recently availed ourselves of the opportunity of visiting what is probably the largest bicycle manufacturing concern in the country—the Pope Mfg. Company, makers of

the Columbia. Every courtesy was extended to *The Iron Age* representative, every department was thrown open and all the details essential in the making of bicycles were explained. It is evident that, in an old establishment like this, there are some methods, dictated by long experience and careful study, which are designed to facilitate the operations and make more perfect the quality of the product, which the proprietors do not care

same size are rooms devoted to the following purposes: Washroom and lockers, reading and recreation, and general machine work. North of this and connected with both is a three-story building 208 x 43 feet, containing stocks and supplies, inspection and receiving departments and general machine work. The remaining structures, numbering 23, are used for brazing, case hardening, tempering, &c.; blacksmith shop, tires, polishing,

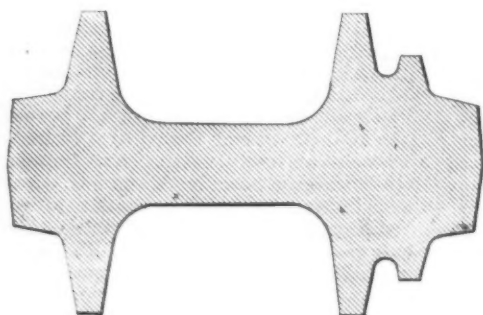


Fig. 1.—Hub Forging.

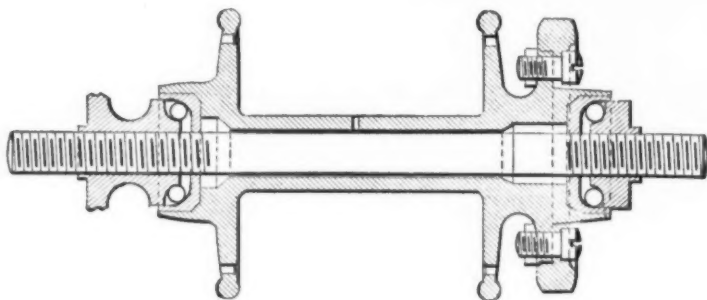


Fig. 2.—Hub Finished.

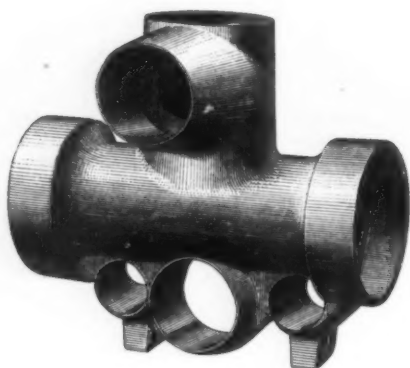


Fig. 3.—Crank-Shaft Bracket Finished.

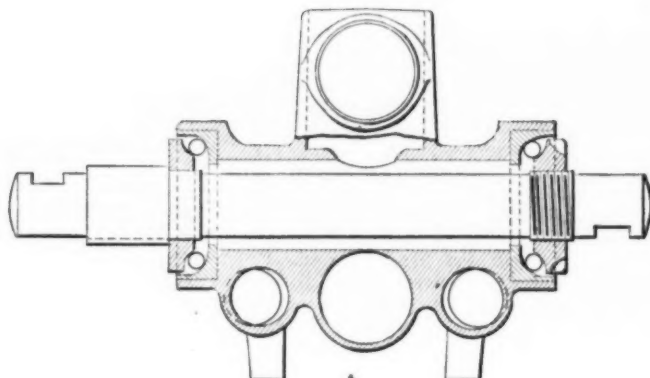


Fig. 5.—Crank-Shaft Bracket in Place.

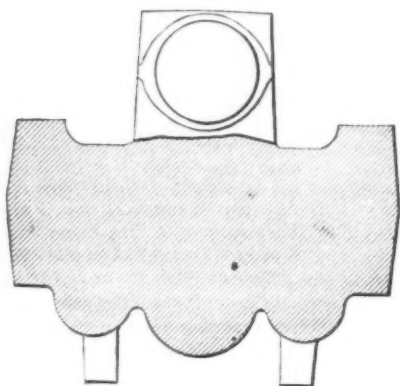


Fig. 4.—Part Section through Fig. 3 Before Boring.

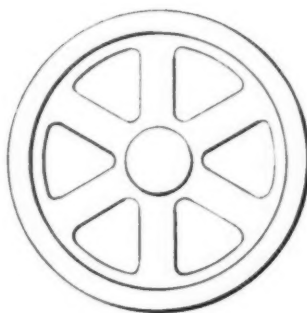


Fig. 6.—Sprocket Wheel as it Comes from Hammer.



Fig. 7.—Vertical Section Fig. 6.

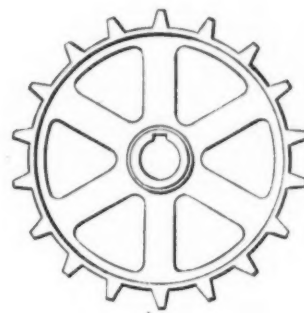


Fig. 8.—Sprocket Wheel Finished.

## MAKING A BICYCLE.

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to publish. In the following we have respected this perfectly natural desire.

### The Works

are located in Hartford on ground measuring 383 x 585 feet, the floor space covered being 5 acres. The principal offices are as follows: The main offices are at one end of a three-story building, the remainder of which is occupied by milling and drilling rooms, model room, die sinking, machine shop and general machine work. In another building south of this and of the

stock, assembling and inspection, wheel setting, enamel department, nickel plating, forge shops, filing and polishing, boiler and engine rooms, electric machinery, pattern shop and pattern storage rooms, felloes, punch and press rooms, shipping department, finishing bicycles, storage of parts, carpenter shop, &c.

In the several departments were found not only standard machines by some of the best makers, but also many special tools designed at the works and intended to perform some special work.



It is impossible, owing to the nature and varied character of the work carried on, to divide a description of it into steps, one following the other in natural order. One department may be engaged on work unlike in every other respect that done in the next, and having no connection with

may be said to be made of steel throughout.

All steel tubing used comes from England, that firm being convinced from the experience they have had that this tubing is superior in quality and better adapted for the purpose than any that has hereto-



Making a Bicycle.—Fig. 9.—Frame of Columbia Bicycle.

it. Yet all these parts are finally brought together in the assembling rooms, and take their allotted places in the bicycle. This will explain why no regular order, so to speak, has been attempted in the following.

#### Material.

The aim of the designers of bicycles has been directed to the accomplishment of two main features: 1, the machine must be light in weight, and, 2, it must have the strength necessary to enable it to with-

fore been obtainable at home. And yet we were informed that steel of such high grade and so well suited to the purpose is now being made in the mills of this country that it is most likely that the '93 Columbia will be made of American steel.

All the steel is delivered in certain sized lengths and of all diameters according to the final use to be made of it, and stored in racks in the usual way. In a similar way are stored steel from which the hubs are forged and the wires for the spokes.

#### The Forge Department.

In beginning a description it would perhaps be best to first visit the forge department and inspect the work there being done. In Figs. 1 and 2 are shown one of the hubs, Fig. 1 being a section through the center of the hub as it comes from the hammer, Fig. 2 showing the hub as it is in the machine, it having been bored, the recesses formed in the ends, the flanges bored for the spokes, and in every way possible its weight reduced without impairing its strength. Figs. 3, 4 and 5 show the connection brackets for the safety of this year's pattern. The tubes forming the frame are brazed in the several openings shown, the pedal axle passing through the center as indicated in Fig. 5. This is the most difficult forging made, and although much machine work is afterward expended on this part in boring it out and lightening it, no other way has been found to make it, giving such good results, as with the use of the hammer. Figs. 6, 7 and 8 show, first, the sprocket wheel in face and section as it comes from the hammer, Fig. 8 being the wheel finished.

Along one side of this department are the gas furnaces for heating the steel, and through the center are drop and helve hammers of various sizes. The stock for making the hubs comes in round bars of suitable diameter for hammering out the piece desired. The rods are heated, and at one heat the pieces are in every case forged. In the case of the sprocket wheel the thin portions forming the openings between the spokes are stamped out, the punch for doing this being so formed that its six prongs project to different lengths beyond the body. This is done in order that the openings may be stamped out one at a time, thereby greatly lessening the power required to operate the punch. The outside is then trimmed in another trimmer, after which the wheel

goes to the machine department to be cut and finished.

#### The Frame.

The main frame is shown in Fig. 9, from which, and from Fig. 10, which is the headstock through which the handle bar passes, an idea can be obtained of the several parts and the method of putting them together. The frame is first fitted, as shown in Fig. 9, the ends of the tubes being pinned in place in order to insure their remaining in position until they have been brazed.

This work is carried on rapidly and without hitch, the rigid system of interchangeability of parts and the employment of special machinery and templates for boring the holes for the tubes and pins insuring their fitting accurately together. More than this, as the tubes have been cut to exact lengths and as the distance between the pin holes is the same in every instance, all the frames of a certain pattern are of the same outside dimensions. This is important, as a slight variation would interfere with the final assembling of the whole.

From here the frame goes to the

#### Brazing Department,

where the joints are brazed. This operation requires great care and long experience on the part of the workman. The two parts to be united must be heated uniformly and to such a degree as to insure the flow of the flux to the facing surfaces in order to produce a perfect union. The joint is held in a sort of open box made of fire brick, and is placed at the point where the flames from two large blow-pipes meet. Gas is used for fuel, the air necessary being supplied by blowers. Afterward the frame is cleaned, filed all over, tested, enameled, polished if it is to be nickel plated, and sent to the assembling room.

#### Making the Felloe.

In making the felloe or iron to receive the rubber tire, and also in making the mud guard, the metal is rolled into the desired shape by means of three rollers, arranged at points of a triangle, and which can be adjusted toward or from each other. Some felloes used are rolled from a tube, a section through this resembling a letter U formed with double lines.

Solid felloes are united into a perfect ring by means of an electric welding machine. This has been found to work admirably and at the same time to serve a secondary but important purpose. The welder in every instance can tell without doubt whether the joint has been successfully made or not, and further, during the process, he gets a very accurate idea of the quality of the steel. Hollow rims are united by brazing. After brazing, the rims are again rolled in order to make them perfectly true, the machine for doing this being built on the same principle and serving the same purpose as the ordinary straightening machine.

The felloes are then bored to receive the nipples holding the ends of the spokes, the holes all being at an angle to the plane of the wheel, half of the holes having their axis in one direction and half in another, this being done that there may be no bend in the spokes at this point.

Most of the work on the hubs after they have been forged is done on the lathe, the surface being left as it comes from the machine if the hub is to be enameled, but is polished if it is to be finally nickel plated. The holes to receive the spokes are countersunk, half being countersunk on one side and half on the other, this being required, as half the spokes enter one side and half the other.

#### Making the Chain.

One of the most interesting processes pursued is in the chain department. The chain, as is well known, consists of blocks

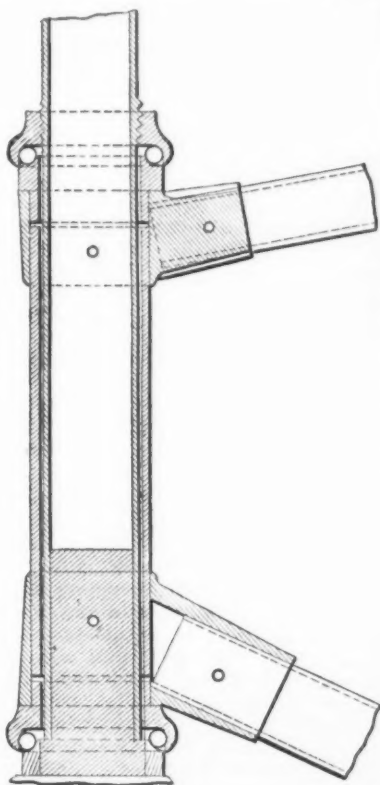


Fig. 10.—Steering Head in Section.

stand the rough usage it receives. To gain these points every part where strength is needed is made of steel, the frame being of cold-drawn seamless steel tubing, the felloes of steel, the spokes of drawn-steel rods, the hubs, brackets and sprocket wheels of forged steel; in fact, the bicycle

which engage with the teeth of the sprocket wheels and which are united by side links. A gang saw cuts the bar into the proper length to make the blanks, after which the blank is put in a jig and three holes drilled through the block, the two end holes being intended to receive the pins passing through the links. The division separating the holes is then punched out, the object of the center hole being to receive a piece of felt, which being soaked in lubricant, serves to keep the pin joint oiled. The links are stamped out. The chain having been assembled, it is taken to the riveting machine, which is a spring hammer the spindle of which turns a certain part of a revolution at each stroke in order to insure the formation of a round head. The chain is then placed on what we may term a dummy set of bicycle sprocket wheels, upon which it is run for a time in order to make all the joints work freely. It is finally tested under a pull of 800 pounds. The chain for this year's Columbia is formed of 46 blanks, 92 links, 92 rivets or pins and is 46½ inches long.

#### Gauging and Testing.

The high grade bicycle of the present day, being in the strictest sense of the word made on the interchangeable principle, it is of the first importance to have not only a very rigid system of inspection, but also appliances by means of which certain parts can be turned out in quantity and absolutely alike. All the material intended to bear great strains is inspected after each operation and in some cases during the operation. A further reason for carrying interchangeability of parts so far is to facilitate repairs, and in order that this may be quickly done one building is devoted to the storage of parts of machines. We were informed that in that building were duplicates of all the parts of every machine ever built by the company. Since it is not possible to keep track of the old-fashioned machines, the company have no way of knowing when a certain style of machine has been totally discarded, and it therefore becomes necessary for them to keep the parts even of machines built 12 years ago.

All main parts, like the sprocket wheel, hubs, bearings, &c., are gauged, the allowance for variation being one quarter of a thousandth. A variation in excess of this throws the piece out.

It sometimes happens that the frame is warped by the heat necessary in brazing—that is, the tubes of which it is composed do not lie in the same plane. It is bent until this defect has been overcome and is finally tested with a simple gauge like instrument, which checks all the dimensions and makes known any fault.

#### Assembling the Wheels.

Twenty four different kinds of spokes are kept on hand in the wheel assembling department, this number being required by the different styles of machines built. In the first operation in assembling, the hub is placed in a centering fixture and the rim laid down. The spokes are then run through the holes in the hubs, and the wheel "strung up," so called. The outer ends of the spokes are threaded in order to enter the hardened brass nipple, the cap of which is, of course, on the outer side of the rim. The boy who strings the wheel up merely tightens the nipples sufficiently to hold the parts together. After this the wheel goes to an expert workman who tightens the spokes, bringing them all under the desired tension. The wheel is then mounted on an axle and turned, a piece of chalk held near the rim serving to indicate any irregularity. To correct such defects and make the wheel perfectly true, the nipples are tightened or loosened. This is a simple matter and yet one requiring great judg-

ment. If a certain part of the rim is bent to one side the spokes upon the side toward which the rim leans are loosened and those directly opposite tightened, thereby drawing the deflected part back to its true position. That this is possible will be understood when it is remembered that half the spokes join one end of the hub and the other half the other end, and that the ends of the hub are some distance apart.

When one part of the rim is further from the axis than it should be the spokes near that part are tightened, in order to pull in the projecting part, the spokes diametrically opposite having been loosened in order to permit this. These corrections must all be made, and when the rim finally runs perfectly true all the spokes must be under the same tension. The wheel is then ready to receive its rubber tire, which is cemented in place.

#### Assembling the Machine.

All the several parts finally come together in the assembling room. Here the machine is quickly put together and the most rigid system of inspection followed, in order to ascertain that every particular piece is perfect and in perfect position. It must not be understood that each particular piece of the bicycle is brought separately to this department. Some of the parts, such as the crank shafts and pedals, have been assembled and inspected elsewhere and enter this department in finished shape, ready to be placed in the machine. In such cases the inspection the bicycle now receives is really a reinspection.

#### General.

No idea can be given of the amount of energy and skill displayed in the equipment of a bicycle manufactory. One of the most important items, both as regards the skill required and its cost, is in the making of the dies for forging. These are made of English steel, and they must be practically perfect in finish in order to produce the best results.

The nickel plated parts are first polished, cleaned perfectly, electrically coated with copper and then with nickel. This method produces the most durable surface known.

Throughout the establishment the check system is employed, all the tools being made and repaired by regular tool makers and delivered to the men, who deposit checks for them.

Much of the preliminary work looking to the organization of the firms of Carnegie Brothers & Co., Limited, Carnegie, Phipps & Co., Limited, and the Keystone Bridge Company, all of Pittsburgh, into a new concern to be known as the Carnegie Steel Company, Limited, has been effected, and the consolidation will become operative on July 1 next. The following will be the officials of the new company: H. C. Frick, chairman; John G. A. Leishman, vice-chairman; F. T. F. Lovejoy, secretary; H. M. Curry, treasurer, and W. P. Palmer, general sales agent. As before stated, the new organization will own and operate the following plants: Edgar Thomson Steel Works and blast furnaces at Bessemer, Pa., and Allegheny Bessemer Steel Works at Duquesne, Pa., both now controlled by Carnegie Brothers & Co., Limited; the Upper and Lower Union Mills and Lucy Furnaces at Pittsburgh, the Homestead Steel Works at Homestead, Pa., and the Beaver Falls Mills at Beaver Falls, Pa., all now controlled by Carnegie, Phipps & Co., Limited, and also the plant of the Keystone Bridge Company at Pittsburgh, which has always been a Carnegie interest. In regard to a report recently circulated through a Pittsburgh trade paper, to the effect that the

Illinois Steel Company will be included in the consolidation, we are advised that there is no truth whatever in this report.

#### The Condition of Brazil.

A Rio correspondent writes entertainingly of the present condition of the republic, politically and financially, but expresses little confidence in the future, on account of the friction between the naval and military authorities and the arbitrary methods adopted to maintain the semblance of government. The writer says:

In 1888, when the country was peaceful, prosperous and happy, there were only 205,208,000 milreis of paper money in circulation, and to-day there are some 600,000,000 of it afloat. On the day that the monarchy was destroyed the milreis was at par (54 cents), but now it is away down to 17 cents, and sinking lower. All imports are paid for in gold coin; all debts contracted when the milreis was at or near par are now being collected at the low rates of exchange, in many cases doubling the indebtedness. Yet Brazil is too rich in natural resources to become quite bankrupt, however badly managed by mis-called "patriots." It is a larger country than most people imagine, containing 3,288,110 square miles—considerably more territory than the United States possesses, inclusive of Alaska, and every inch of it is fertile. It has about 14,000,000 people and a little more than 6000 miles of railway. Brazil, unlike the rest of South America, being Portuguese, its people are more anxious than some of their neighbors to cultivate social and commercial relations with Uncle Samuel. England, so largely dominant in Chili, Peru and the Argentine Republic, has alienated the Brazilians on several grounds. Besides, the United States is the best customer for coffee, the chief product of the country. The one article of crude rubber alone, from the Amazonian districts above Para, amounts to about \$2,500,000 per month, and about three-quarters of it all goes to the United States.

**Inundation Losses**—States bordering on the lower Mississippi will be subjected to unusual expenditure this year in the repair and maintenance of the levees. In 1882, 26 of 58 parishes in Louisiana were under water, 14 counties in Mississippi, and 14 in Arkansas. The total losses estimated were: Louisiana, \$15,004,000; Mississippi, \$6,701,000; Arkansas, \$4,033,000; Tennessee and other States, \$1,300,000. Total, \$27,038,000. The acreage and number of people affected were:

	Acreage under water.	Cultivated land under water. Acres.	Population of overflowed districts.
Louisiana	6,056,000	498,000	142,900
Mississippi	3,495,000	332,000	123,800
Arkansas	3,907,000	303,000	72,600
Tenn. and other States	623,000	84,000	62,800
Totals	14,081,000	1,277,000	402,100

The total losses from overflow in the lower Mississippi States since the war are estimated at \$84,096,000, the worst years being 1867, 1874, 1892, 1884 and 1890. The account of the lower Mississippi Valley with the river since the war, therefore, will be: To the building and maintenance of levees, \$32,836,410; to crevasses and losses from overflow, \$84,096,000; total cost of high water, \$116,932,410. That is more than the assessed valuation of all property in the alluvial districts. It includes only direct damage—that is, property destroyed, and not the more indirect loss due to the interruption of business, the stoppage of railroads, &c.

The total immigration to the United States during April last was 90,595, against a total in April, 1891, of 85,001.



### The Sturtevant Automatic Double Inclosed Engine.

We present in the accompanying cut a unique design in the way of upright engines suitable for general work, but specially designed for fan propulsion and electric-light work. The bed upon which the engine rests is well spread, very heavy, and is so designed as to give the engine a substantial foundation. The body of the engine is built in two parts, the upper part consisting of the cylinders alone, which may be readily removed for re-oiling. It will be seen that this makes a convenient arrangement in case repairing of either the cylinders or the valve seat is needed.

throwing of any oil upon the running parts. This is a prominent feature of the engine, as it assures continuous running in dusty atmospheres where unprotected engines would become worn by the dust which would unavoidably enter all bearings.

As the cylinders are placed side by side in the same casting, the cranks set opposite at an angle of 180° and steam admitted simultaneously at the top of one cylinder and the bottom of the other, the reciprocating parts are balanced in their movements and high speed is made possible. The cylinders are of large diameter as compared with the stroke, so that a large amount of power may be developed at high rotative but moderate piston speed. By the omission of the band wheel and the

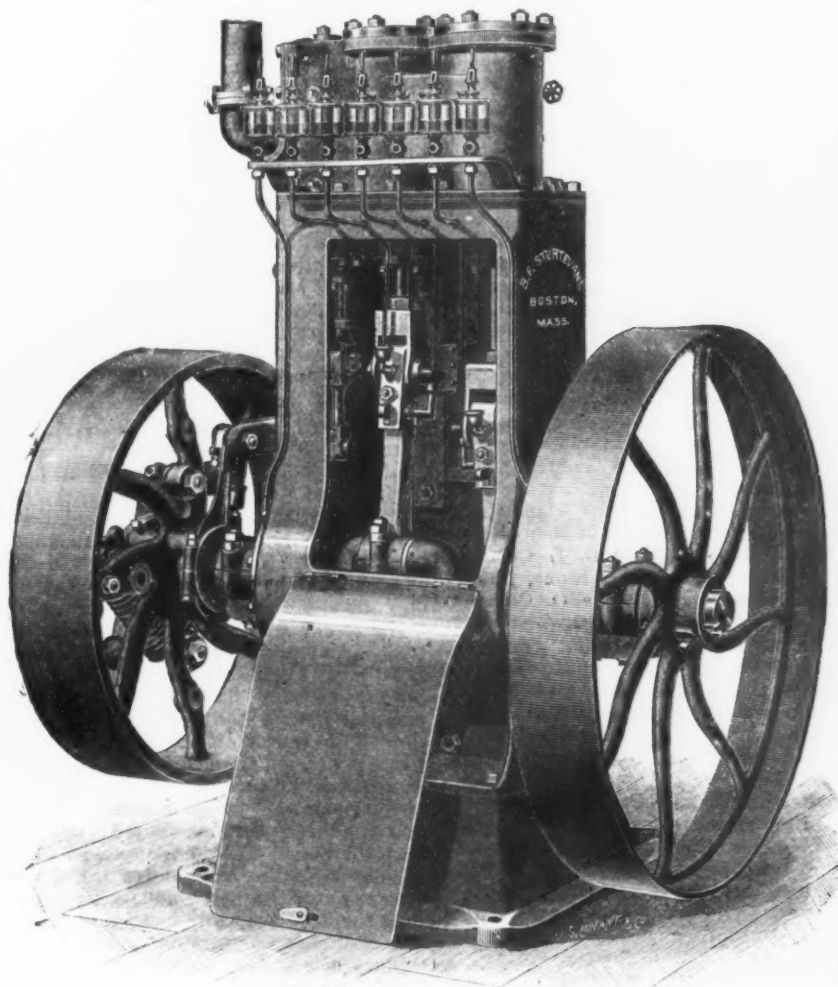
diameter at the bosh, and 9 feet 9 inches diameter of crucible. The two blowing engines have 300 horse-power each. The coke ovens are built after Bernard's system (improved Coppée). There is also a very complete coal washery connected with the furnace plant which I have built."

### Improvements in Welsh Works.

The Dowlais New Works, Cardiff, says the *Western Mail*, are doing great things. From one furnace last week no less an output of pig than 1110 tons took place. This is exceeding the most hopeful estimate. When the works were designed the belief was that ultimately a yield of 1000 tons per furnace would be obtained, the average yield of the old type being 500 to 600 tons only. This pig is at present run up to the old works on the hills, but a glance around the new works, to an eye accustomed to steel operations, is sufficient to show that it will not be long before something more than pig is turned out at the Dowlais Works, Cardiff. Those familiar with the old processes at iron and steel works will remember the laborious method of breaking up the pig from the "farrow." It was done with double-handled sledges, as a rule, and the constant result was, after the exhibition of great strength and labor, that the pig iron was a good deal smashed up. At the new Dowlais Works a patent process, called the Martin-James, is in operation, and is doing great things. By an excellent mechanical contrivance the whole of the mass of pig, after it has run from the furnace, is bodily lifted and conveyed from the furnace, when it is brought under the action of the patent, and by simply turning a lever each pig is cut cleanly from the mass and ready for dispatch. This has caused a good deal of saving in labor, which means a considerable expense avoided.

Similarly at Cyfarthfa we note that utilization of waste forces is the order of the day. At the present time these works are as busy as possible, the only drawback being the low prices at which orders are taken, but if not booked at present low quotations they would not be obtained at all. One result of this is that wages are in a low groove, and must, perforce, remain there until a change takes place in the price of steel bar. In the matter of utilization at Cyfarthfa we find that from one department waste heat, which used to be lost completely, is now doing good service in the making of steam, and thus in the economizing of coal. In another department 11 Lancashire boilers are being laid down, and will be ready in another week, to which the waste heat of the gas ovens will be applied, and here, again, not only will a large quantity of coal be saved, but the atmosphere of the district will be less impure.

The message of the President of the Argentine Republic at the opening of Congress, 24th ult., speaks of increasing trade and revenue, and a further improvement is promised. Nevertheless, the Republic must struggle for a long time with the public debt that has grown to enormous proportions during the last 30 years. Meanwhile, it is true, there has been substantial progress. The area under cultivation has increased from about 500,000 acres to 7,430,000 acres, with a proportionate increase in the number of sheep and horned cattle. There are now 7000 miles of railroad in operation, and between 4000 and 5000 miles are in course of construction. From statements like the foregoing the Buenos Ayres *Standard* argues that in spite of the many drawbacks, abuses and errors, the progress that the Argentine Republic has made in 30 years surpasses anything accomplished in any other part of South America.



THE STURTEVANT AUTOMATIC DOUBLE INCLOSED ENGINE.

The valve is of the piston type and supplies both cylinders by a special arrangement of ports. The design of the cross-head is readily seen, it being of the slipper guide type running upon a steel slide bar attached to the back of the frame. The connecting rod is very substantial, being of the marine type with large crank-pin bearings. The crank itself is carefully counterbalanced, and all moving parts are made as light as is consistent with the heavy duty which is placed upon the engine. The regulation of the engine is secured by means of a shaft governor acting through a single eccentric to change cut off from zero to seven-eighths stroke. The oiling of the engine has had special attention, and the oilers are all collected together and connection to the various bearings made by means of tubes. By means of the doors shown the entire engine can be tightly inclosed, preventing the admission of dust or the objectionable

bed beneath the engine it may be placed upon a frame casting and connected direct to the shaft of a moderate speed dynamo. In fact, although it has been but recently introduced by the B. F. Sturtevant Company of Boston, Mass., it is being very generally employed for this particular purpose.

We have received from Walter M. Stein, metallurgical engineer, 325 Walnut street, Philadelphia, the following note with reference to the recent statement published in these columns regarding the mineral production of Nova Scotia: "There are a few errors in the description of the New Glasgow Iron, Coal and Railway Company's plant which I am now building. Mr. Gilpin gives the size of the blast furnace as 65 feet high by 25 feet 6 inches at the bosh, and two blowing engines of 1000 horse power each. The correct size of the furnace is 65 feet in height, 15 feet 6 inches

## WORLD'S FAIR NOTES.

### Progress of Construction.

The Manufactures and Liberal Arts Building, which is the main structure, is being rushed toward completion. Three pairs of the trusses were finished early in the week and the fourth pair on Saturday. The iron contractors have more than 200 men employed on them and the work is going on rapidly. Altogether the past week the force of men employed on the grounds averaged 6500, which is the highest number yet reached. Increased force was put on all the unfinished buildings.

The first truss for the roof of the nave of the Manufactures Building was raised on Friday, and this roofing work will progress from this time as rapidly as the roof of the central hall. Eight State buildings are now under way, and Great Britain began work on her building on Saturday with the driving of the piles for the foundation of the structure on the lake shore. The Machinery Hall annex has grown like a mushroom in the past ten days. The roof is on, the tower roofers are at work, and the skylights are more than half finished. The iron workers have begun on the third tier of roof trusses for the main entrance. The roof carpentry work is done on the Agricultural Building, and the superstructure of the annex is being raised. The Electricity Building is growing rapidly, and the contractors say the roof carpentry work will be finished in ten days. Work is progressing on the peristyle, casino and music hall, the pile foundations for the music hall being finished.

The material for the permanent iron bridges across the canal between the Electricity and Manufactures buildings is on the ground, and work has been started on one of them. The building to be used for the shop in which the floats are to be constructed is finished, and the work of making the floats has begun. The erection of 13 floats is under way and decorative work has been done on three of them.

Sculptor Boyle is placing his reliefs in the four big panels at the main entrance of the Transportation Building. There has been some lively work on the Fine Arts Building in the last week, and the roofers are now at work on all four corners of the building. Along with all nature, the park is becoming beautiful with its grass, shrubbery and trees, and the work of the landscape gardeners is becoming apparent on the wooded island and the shores of the lagoon.

### The Electric Battle Over.

The Committee on Grounds and Buildings, last week, was forced to award the contract for incandescent electric lighting to Westinghouse because he had by \$81,000 the lower bid. However, the committee asked a \$1,000,000 bond as an evidence that the Westinghouse Company would fulfill their contract, and gave them until June 10 to accept the terms. President Westinghouse thought the demand for a bond of \$1,000,000 unjust and at last accounts had not decided whether he would accept the terms.

The present bid offers to do all the incandescent electric lighting for \$399,000, on an all-alternating current system. For inside wiring not placed in position a deduction of \$2 a lamp will be made, and for all additional wiring in any of the main buildings \$3.50 a lamp will be charged. The same rate will apply on the State and foreign buildings. The company also offer to supply additional capacity of generators, mains and distributing appliances up to service ends at \$1.75 per lamp capacity.

### A Water Commerce Congress.

The last circular issued by the auxiliary is a preliminary address bearing upon a

great Water Commerce Congress. In this connection the drainage question of Chicago will be considered by the greatest engineers in the world, as well as the great ship canals between Lake Michigan and the Mississippi, between lakes Huron and Ontario, between the lakes and the Hudson River, and across the peninsula of Florida. The projected enlargement of the Welland Canal and improvement of the River St. Lawrence is to be discussed and the scope of the congress also includes such questions as these:

"The economy of recent improvements in seagoing steamers, improvements and changes required in ocean harbors to accommodate the increase in size of vessels, the best methods of improving tidal harbors, the most efficient and economical plant and equipment for harbors—tugs, barges, elevators, cranes, docks, piers, &c.; the best method of interchanging traffic between water and rail transportation, interoceanic canal projects—present status, necessity for, results to be expected; the most economical methods of navigating great inland bodies of water, the economical effects of changes recently made or proposed in the construction and operation of lake vessels, systems of slack water navigation—their construction and operation; the best methods of improving navigable rivers—their results in cheapening transportation; the respective effects of waterways and railways upon each other, and the results to the public; inland canals—their present position, usefulness and economy; methods of cheapening transportation on canals—self-moving vessels, various methods of towing, &c., and additional facilities in water transportation required in Europe, South America or other parts of the world."

The committee having the Water Commerce Congress in charge is composed of John C. Dore, chairman; E. L. Corthell, vice-chairman; George F. Stone, Murray Nelson, Benazette Williams, O. Chanute, D. E. Richardson, Thomas G. Crosby.

The local arrangements of the congress are in charge of this committee, but the plans of the World's Congress Auxiliary provide that every committee shall have the benefit of the advice and co-operation of an advisory council composed of persons eminent in the department and selected from all parts of the world. In addition to this advisory council a committee of co-operation may be appointed by any existing organization which may desire to promote the success of the proposed congress. All the congresses will be held in the Auditorium and large halls down town.

### A German Chimney.

Custodis & Co., a firm in Germany noted for the erection of extremely lofty chimneys, have been granted permission to put up such a chimney on the exposition grounds. The firm have been cabled that they will be permitted to erect, probably near Machinery Hall, a brick chimney 115 feet high and 6 feet in diameter. This chimney, it is expected, could be completed within the month of September. This lofty chimney is, so far as has yet been decided, the only brick chimney which will be put on the grounds, all the others being of iron.

### Exposition Work in New York.

Representatives of over 100 prominent Eastern firms met in the Stewart Building, New York, on Thursday last, and formed an "International Exhibitors' Association" in connection with the Chicago Exposition. Delmore Elwell stated that five times as much room had been applied for as could be given for exhibits. These officers were elected: President, Cornelius N. Bliss; vice-presidents, John Sloan, C. T. Cook, Sereno D. Bonfile, Ernest Redfern, J. Seaver Page, Charles S. Upton, George Seabury and William Schwartz-

welder; executive officer, Delmore Elwell; secretary, T. A. Matthews. The meeting was adjourned subject to the call of the executive officer. The World's Fair Commissioners representing New York City held a meeting on the same day and appointed Edmund C. Stanton as secretary. Rooms over the Madison Square Bank, corner Twenty-fifth street, Broadway and Fifth avenue, have been rented for the commission and are now open to the public.

### Natural Gas Exhibits.

B. F. Havens, Executive Commissioner of the Indiana World's Fair Commission, has commenced soliciting exhibits of manufacturers in the Indiana natural gas fields. He met the representatives of the 52 manufacturing establishments of Anderson on Tuesday of last week at the parlors of the Anderson Press Club, where there was a free interchange of sentiment as to Anderson's exhibit. The result is that under the direction of representatives of three of the largest industries of the city, applications for space at the World's Fair will be made by nearly all of the concerns within ten days. The Anderson Cresting and Coping Company have donated the cresting made of colored glass for the veranda of the Indiana Building, the value of which is equivalent to \$1000. It is estimated that Anderson's exhibits will represent \$50,000.

### Californians Against Boycotts.

The Board of Directors of the Manufacturers' and Employers' Association of California completed and issued the following manifesto on the 6th inst.:

The Board of Manufacturers and Employers of California believe that the time has come when a universal and systematic effort should be made to put an end to boycotts and the pernicious interference of trades unions with the internal affairs of trade. Unless this be done the already suffering industries of the city will soon become so badly handicapped as to be practically out of the race in the competition of the world. Every line of production has suffered from this cause. Tons of iron work of all sorts, formerly made here, are now shipped in from the East. Large quantities of printing are now shipped from the East. California produces some of the best leather in the world, and yet the amount of leather products imported from the East is steadily increasing. The manufacturers of furniture are facing a ruinous competition. Much of the hardwood finishings for our buildings is prepared in the East and shipped here ready to be put in place. The lumber output is curtailed. Coasting vessels are laid up. Although the second wool-growing State in the Union, our output of woolen goods is ridiculously small, and growing less. Eight hundred white cigar makers once found employment in San Francisco; now less than 200 work at their trade. Eastern barrels threaten to close our cooper shops. Eastern bottled beer competes with a superior San Francisco product.

Several factories have gone East and more are expected to follow. Possessing an unrivaled harbor, a splendid location, a rich and vast subsidiary country and plenty of capital, the city ought to grow faster than the cities of the East. Instead, at the present rate, the next census will show a population of 200,000 in place of the 500,000 it ought to show. The loss of the city is the loss of the State. Stagnation means the consumption of less lumber, less grain, less fruit, less of everything the country produces. It means that the farmer must pay freight to distant markets. The firms in the Manufacturers' Association employ 40,000 people and pay \$100,000 per day in wages. What if these plants go East?



Wages are higher here than anywhere else in the world. According to the official report of the Bureau of Labor Statistics they are more than 10 per cent. higher than in Illinois; more than 20 per cent. higher than in New York; more than twice the amount of wages in England, and more than three times the wages paid in Germany, France and Italy. While wages are higher, the hours of labor are shorter than in any other country except Australia, the cost of living is less and the climate permits work all the year around. This is not due to the unions. It is natural to California. It would prevail if no unions existed.

The manufacturers do not complain of the wages. There is no desire to reduce them below the normal rate, which must always remain the highest. If permitted to do business in peace the manufacturers could pay these wages and prosper. It is the element of uncertainty that kills. The labor leaders seek to control the men and a manufacturer cannot manage his business to the best advantage. It is because the life of a business has heretofore been at the mercy of the boycott that manufacturers have been afraid to launch into new undertakings, improve their plants or push for new avenues of trade.

The levying and agitation of a boycott is always harmful; not perhaps to the particular industry sought to be injured, but to the community at large. It fomenters uneasiness. It alarms capital intended for investment. It creates that uncertainty which is the death of trade. It gives a bad impression of San Francisco to intending settlers. Boycott circulars always lie. It is not too much to say that not a single truthful boycott circular has been issued since boycotting began. Their misstatements slander the city and slander the men doing business here. They are pernicious, destructive and wholly bad.

The boycott is a crying evil of our times. It is the persuasion of brute force. It does not belong to modern civilization. It is never honest. Walking delegates have been bribed to boycott competitors, and walking delegates have exacted bribes for immunity from boycotts. It is never just. When Cahn, Nickelsburg & Co. introduced new machinery into their factory a committee of expert manufacturers reported that the new rate on the new machines had actually increased the wages of the operator, yet a boycott was levied. The *Abend Post* is boycotted after the Typographical Union declared the boycott untenable and asked to have it raised. Wellington coal is boycotted after the Wellington strike is declared off. Breweries are boycotted, notwithstanding that the beer drinkers in a body protested against the wrong and declared that they would no longer permit the Federated Trades to dictate what they should eat, drink, wear and read. Dry-goods houses are boycotted, although all their clerks declare against it. A boycotter is in all respects a highwayman. He is an industrial wrecker. His single and simple proposition is, "stand and deliver."

These evils do not spring from the better judgment of the workmen themselves. They are the result of the system of paid walking delegates. It is a matter of common experience that a union supporting a walking delegate can never be at peace. The moment agitation ceases the men grow careless, do not attend meetings, and neglect to pay dues. The paid walking delegate finds his source of revenue growing precarious and his reputation as a leader growing pale. He fomenters discontent, creates a labor war, fills up his treasury and is at once the observed of union men and the hero of the hour.

The paid walking delegate has everything to gain from a labor war; the workman has everything to lose. If a strike succeeds the workman is still a loser, but the paid walking delegate reigns su-

preme. Agitation is the life of unionism. None know this better than labor leaders. They have a slogan: "Agitate, educate, organize." But "agitate" comes first, and is the most important. This activity is good for the paid walking delegate, but it is ruinous to business and calamitous to industrious workmen. When a workman stops to consider the amount he has paid in dues to his own union, the amount in assessments to assist other unions in trouble, the amount he has lost in wages by going out on strikes, he sees at once that the union has cost him much and gained him nothing. The average workman does not desire to belong to a union. He does not attend the meetings. He only belongs because compelled. A few men run the meetings, run the unions and bring on all the labor wars. The few gain by it; the many suffer.

This condition of things should no longer be tolerated. The boycott should be stopped. The citizens of the State should hold this evil in the hollow of their hands. Let them declare against the boycott and it is doomed. Watch your employees and discharge boycotters. Patronize boycotted firms. When boycotting becomes dangerous, and boycotters help more than they harm, boycotting will cease.

#### New York Factory Inspection Law.

Among the most important bills signed by Governor Flower was that entitled "An act to regulate the employment of women and children and to provide for the appointment of inspectors to enforce the same." It is an amendment to the law of 1886 bearing the same title. It provides that no person under 18 years of age and no woman under 21 years shall be required, permitted or suffered to work in any manufacturing establishment more than 60 hours in a single week, or more than ten hours a day unless for the purpose of making a shorter work day on the last of the week.

No child under 14 years of age can be employed in any manufacturing establishment in this State, and it is unlawful for any proprietor or his representative in a manufacturing establishment to hire or employ any child under the age of 16 to work therein unless there has been an affidavit obtained from the parent or guardian, stating the age, date and place of birth of the child. There shall be posted conspicuously in every room where children under 16 years of age are employed a list of their names with their ages. No child of 16 shall be thus employed who cannot read and write simple sentences in the English language, except during the vacation of the public schools in the city or town where the minor lives. The Factory Inspector and his subordinates have the power to demand a certificate of physical fitness from some regular physician in the case of children who may seem physically unable to perform the labor at which they may be employed, and they may prohibit the employment of children who cannot secure such certificates.

Children under 15 years of age cannot operate an elevator and no child under 18 years of age can operate an elevator running at a speed of over 200 feet a minute. The bill also provides more stringent remedies for the protection of the lives and limbs of those employed in manufacturing establishments, both in regard to the construction of elevators and as to the proper protection of stairways.

Not less than 60 minutes shall be allowed for the noonday meal, although the Factory Inspector is given power to issue permits in special cases allowing a shorter meal time at noon, when a good reason for granting the same shall have been given. Section 13 provides that "no room or rooms, apartment or apartments in any tenement or dwelling house shall be used for the

manufacture of coats, vests, trousers, knee pants, overalls, cloaks, furs, fur trimmings, fur garments, purses, feathers, artificial flowers or cigars, except by the immediate members of the family living therein. Not less than 250 cubic feet of air space shall be allowed for each person in any workroom where persons are employed during the hours between 6 o'clock in the morning and 6 o'clock in the evening, and not less than 400 cubic feet of air space shall be provided for each person in any workroom where persons are employed between 6 o'clock in the evening and 6 o'clock in the morning.

The Factory Inspector is authorized to appoint not more than 16 persons to be Deputy Factory Inspectors, not more than eight of whom shall be women.

Violation of any of the provisions of the act shall be punished as a misdemeanor and on conviction the offender shall be compelled to pay a fine of not less than \$20 nor more than \$50 for the first offense and not more than \$100 for the second offense, or imprisonment for not more than ten days, and for the third offense a fine may be imposed of not less than \$250 and not more than 30 days' imprisonment.

#### Japanese War Vessels.

Japan still continues to add to the effective strength of her navy. The latest additions are the three coast barquette cruisers, the Itsukushi Kan, Matsushima Kan, and Hashidate Kan. The first two were built at the works of the Compagnie des Forges et Chantiers de la Méditerranée at La Seyne, France. The Hashidate Kan has been built at the imperial dockyard at Yokosuka, Japan, and is almost ready for her trial trip. The first two are completed and are now en route to Japan. The Itsukushi Kan met with an accident to her engines and has put into Colombo for repairs.

These vessels are each 324 feet 10 inches long, 50 feet 10 inches beam, 21 feet 2 inches mean draft, and of 4277 tons displacement. The armament consists of one 12-inch rifle, five rapid-fire Hotchkiss cannon, eleven Hotchkiss revolving guns, and a torpedo tube in the bow and another in the stern. Each vessel is provided with a single military mast built of steel plates, which serves also as a ventilator for the hull. On the mast, about 40 feet above the deck, is built a fighting military top carrying two 37-mm. Hotchkiss revolving cannon. Above this top is another, intended for the accommodation of sharpshooters and large enough to afford protection for six men.

They are twin-screw vessels, having two separate engines, which can be worked at will with double or triple expansion. The designed speed of these vessels was 16 knots, but upon the trial trip of the Itsukushi Kan, the only one as yet completed, the measured mile speed was 16.54 knots.

These vessels will give Japan a very formidable navy of modern steel men-of-war, and, with those now contracted for with European firms, will place her well up among the list of naval powers. Besides these heavier vessels, she is constructing a fleet of first and second class torpedo boats for both harbor defense and cruising at sea. These torpedo boats are all being built at the naval dock yards at Yokosuka, Kōbe, and other places. None has as yet been finished, and on this account no one can predict the success which will attend the efforts of the Japanese naval constructors in the art of fast torpedo-boat building.

The cotton mills at Fall River are in a much more prosperous condition than they were last year. The dividends for the second quarter of 1892 represent 1.67 per cent. on the capital, while during 1891 they amounted to only a little more than 4 per cent.

### Crank Shaft Lathe.

The 125 inch crank shaft lathe here illustrated was designed and built by Bement, Miles & Co. of Philadelphia, for the Newport News Ship Building and Dry Dock Company, Newport News, Va. Although intended for any work of great size, it was especially designed for work upon crank shafts, the tool posts being made narrow, as will be seen from the elevation, in order to permit of their entrance between the cheeks of a crank. The lathe swings 125 inches over the bed and 108 inches over the carriages, the distance between the centers being 30 feet and the extreme length of the bed 79½ feet. The bed is 11½ feet wide and in reality consists of two similar beds, each of which is 57½ inches wide, and which are united by projections cast on them, through which bolts are passed. This space, or the distance between the beds, is 30 inches. The center screw shown in the plan view is used only for operating by power the sliding head or tailstock, which is clamped to the ways by eight bolts.

The cone is 50 inches in diameter, and has six steps for a 7½ inch belt. The spindle is of cast iron, the diameter of the front bearing being 20 inches and its length 31 inches, the back bearing being 15 inches in diameter and 23 inches long. The face plate is 120 inches in diameter, is driven by an internal gear and is constructed as a four-jawed chuck, the jaws being removable when required. The lathe is furnished with a five jawed steady rest, admitting work 49 inches in diameter.

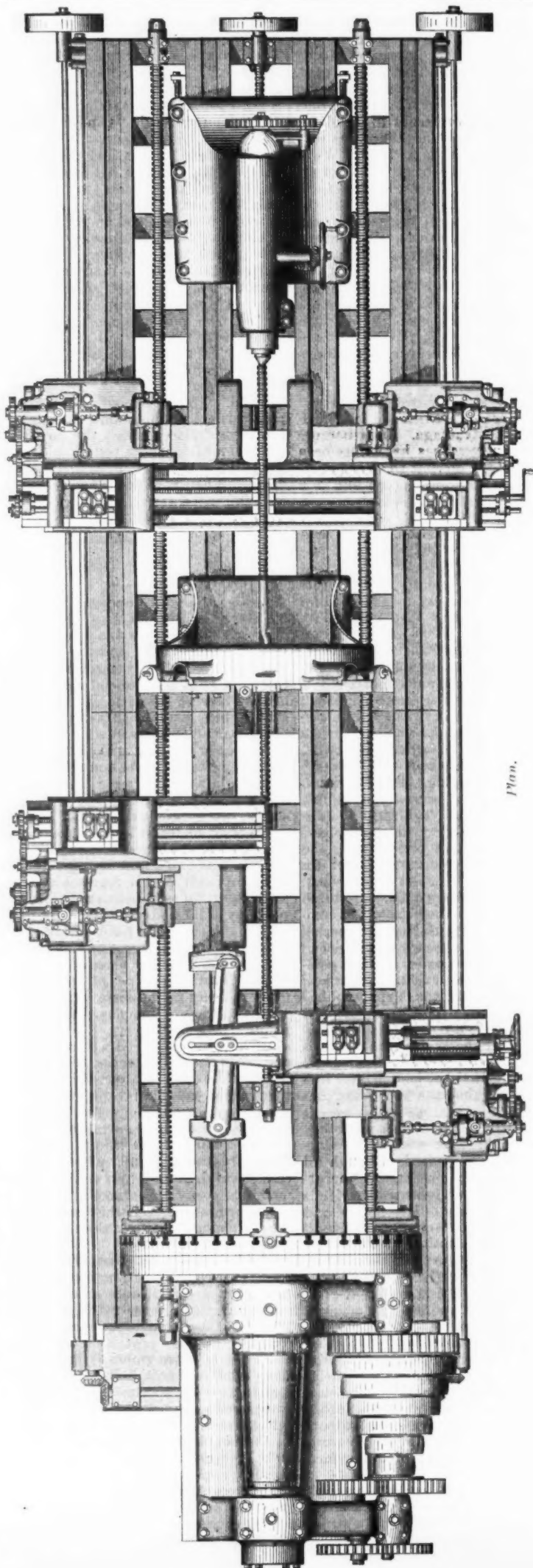
Power is transmitted from the cone spindle through the train of idle gears shown in the end elevation to the splined feed shafts, one on each side of the bed. This is accomplished by means of suitably arranged shafts and beveled gears located under the headstock.

There are four carriages which are entirely independent of each other in all their functions, and have the following motions, viz.: variable, automatic, longitudinal feeds, rapid longitudinal power motion from a separate countershaft, power cross feeds to the main tool post, variable self-acting feeds to the upper tool slides at right angles, as well as hand motions. There are 12 changes in speed on the machine and two overhead, making 24 changes in all. The front carriages are provided with a taper attachment, which is 4 feet long, and gives 2 inches taper per foot of diameter.

The lathe is geared powerfully enough to take the heaviest cuts in steel with all the tools working at once. The machine weighs 300,000 pounds.

### A Natural Gas Suit.

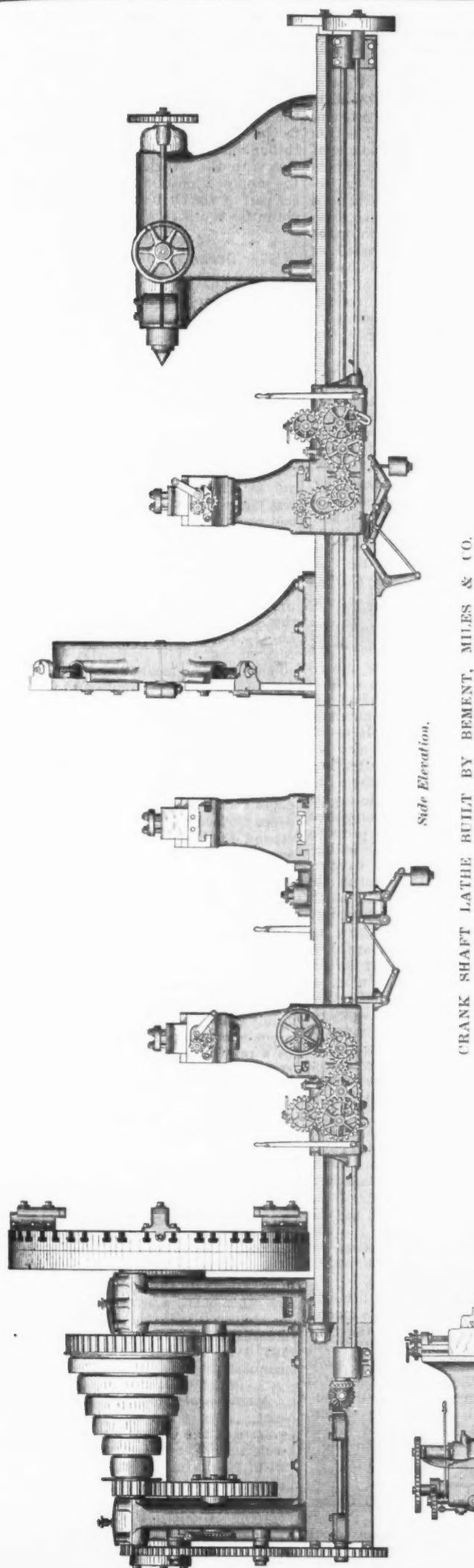
Some time since we made mention in these columns of the fact that Carnegie, Phipps & Co., Limited, of Pittsburgh, had entered suit against the Philadelphia Natural Gas Company of that city to compel the defendant company to supply the mills of the plaintiffs located in Pittsburgh with natural gas. It seems that a contract was made between the parties whereby the plaintiffs were to receive natural gas for fuel purposes for a term of years at a fixed price. Owing to the failure in the supply of natural gas, the Philadelphia Natural Gas Company cut off nearly all the mills which they had been supplying with this fuel in order that private consumers, from whom a larger price for gas was obtained, could be furnished. On account of this action of the defendants in cutting off the supply of gas from the plaintiffs, suit was entered to compel the defendants to carry out the contract. In the courts at Pittsburgh last week a document was filed in answer to the suit by the



Plan.

CRANK SHAFT LATHE, BUILT BY BEMENT, MILES & CO.





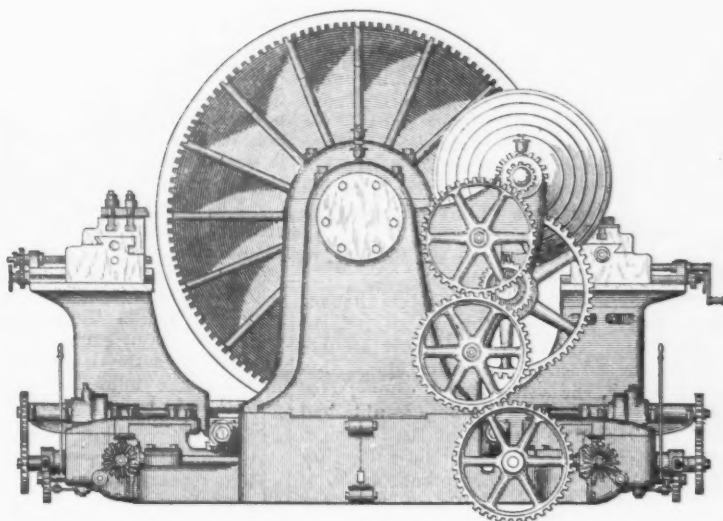
Philadelphia Natural Gas Company, in which there is considerable information concerning the supply of gas of great general interest. Much of this information has been sought for at various times, but was never obtained. The officials of the natural gas companies have contended right along that, while the visible supply of natural gas in certain localities was being rapidly exhausted, other new fields were being opened up which would insure a steady supply for years to come. In their answer to this suit, however, the Philadelphia Natural Gas Company take a different stand entirely, and state that they are unable to furnish mills with natural gas without cutting off hundreds of smaller consumers, and the fear is expressed that within the next three years the supply will be entirely exhausted. Among other things the defendants say:

The plaintiffs' mills at the time this suit was filed consumed about one-fifth of our entire supply, and we found it was impracticable to continue the contract. The defendant company have spent \$3,000,000 in acquiring new fields and laying new mains in order to serve all our patrons, but the present supply is only about one-third what it was three years ago, and the supply to the plaintiffs' mills can only be maintained by cutting off hundreds of smaller customers, which the defendant company do not feel justified in doing, as they never agreed to furnish gas perpetually to the mills.

Since the shortage came the defendants have not engaged in supplying gas in new territory, but have confined their attention to old customers. The company's lines extend many miles from the gas field through the cities before the plaintiffs' mills are reached. Small consumers along the line are more favorably located, and it is impossible to furnish an adequate supply at the works without cutting off those who are along the line. These smaller consumers have refused to voluntarily do without gas, and deny the company's right to carry it past them and deliver it to the plaintiffs, who are less favorably located.

The existence of a supply of gas even for the plaintiffs alone in the future is altogether problematical, and is furthermore dependent upon the exercise of the highest personal skill, knowledge and enterprise on the part of the defendant company in discovering new fields, and their further ability to expend vast amounts of money in acquiring new fields and laying new mains. The nature of the natural gas business is such that it is impossible to know that even three years from the present there will be natural gas within piping distance of the city of Pittsburgh sufficient to supply the plaintiffs' mills.

To exclude gas and smoke from tunnels the Pennsylvania Railroad Company will experiment with a fan, near Baltimore. The fan is to be operated by electric power which is to be generated by a plant outside of the tunnel. It is expected that the fan will have a capacity to clear a tunnel of all smoke within five minutes.



Elevation Headstock End.

### Pin-Holed Tin Plates.

For some unaccountable reason, a new lease of life has been given to the pin hole discussion, a discussion that occupied many columns in our issues of a few years ago, says *The Metal Worker*. All possible theories were then advanced, but in no case was a satisfactory conclusion reached. The subject then quieted down, and in the absence of remark upon pin holes, it might have been thought that the trouble had disappeared in the course of time. Lately, however, renewed attention has been given to it, and we have received several letters referring to pin holes not only in tin plate but other metals as well. This week one of the most interesting letters that has been contributed to the discussion is presented to our readers, the writer, Mr. Moseley of the Moseley & Pritchard Mfg. Company, Clinton, Iowa, having been an earnest seeker after perfect plates for many years past. As his letter says, he was impressed at one time by the theory that pin holes arose from the use of steel, and a little while later he obtained a specially manufactured plate, made from Swedish iron, coated by the hand process with a heavy covering of tin. These plates, which, because of the care taken in their manufacture, were very expensive, gave way after a very short trial, and were no more proof against pin holes than any common coke plate. Although Mr. Moseley modestly states that a single instance of this kind does not prove the case, nevertheless, in view of all the care taken in the experiment, it would seem that he had settled the question of steel not being the cause of pin holing. The theory that pin holing is due to imperfect washing, and the corrosion is the action of the pickling acid left on the plate, has never been minutely described, but it is asserted in a vague way that the action of the acid continues after the plate is coated and covered with tin, and that eventually the tin over the corroding spot is broken and the pin holes result. Another statement of the case is that the tin does not adhere to the spongy spot of acid-filled cinder or other impurity, and that immediately over it there is a break in the surface, perhaps no larger than a needle point, through which the air and water gain access, and which, together with the absorbed acid, hasten the rusting of the plate. The latter theory, it will be observed, depends upon an impurity on the surface of the plate, but whether of graphitic formation or a piece of scale is of minor account. The fact that it does exist and has an intimate connection with the pin holes is the principal fact to be considered, for if it can be proved that the trouble lies in the presence of this foreign substance, then the thing to be aimed at is its removal. It will be noticed that our correspondent advocates the interference of the Government in this matter; but the suggestion is a very wide reaching one, and should receive the most careful consideration before being acted upon. We think it would be more to the point if those who are interested in obtaining plates free of pin holes would subscribe to a common fund for the purpose of investigating the trouble.

Following is the letter of Mr. Moseley, to which allusion is made above:

"As there was a pretty complete change, a few years ago, from the use of iron to steel plates, and as the pin-hole trouble had increased seemingly since about that time, many, the writer among others, were led to reason that the pin-hole trouble had been increased as a result of that change. With that theory in mind the writer, for his company, wrote to Merchant & Co. of Philadelphia, and as that firm had taken a great interest in the matter, they undertook to procure some tin plate made from iron instead of steel.

"June 16, 1890, a letter was received from that firm, from which I will quote: 'At last we have a tin plate that is made of best Swedish charcoal iron. It is called after the Swedish University Upsala. The Upsala is made from the best charcoal iron (not steel) mined in Sweden, the home of good charcoal iron. The iron was brought by us from Sweden to one of the best tin works in Great Britain. There it was heavily coated with pure tin, regardless of expense, and we do hope it will prove to be what you have been looking for for years.' The same day we wired them to send us a box, which was later received. The 8th of the following month we shipped creamery cans made from it. We had hoped for good results, but were disappointed, as we learned a short time afterward that the cans had begun pin holing.

"October 7, same year, we sent two cans made from tin plate manufactured by the United States Iron and Tin Plate Company of Demmler, Pa., and while the imported plate cost over 60 per cent. more than the American plate, the cans made from the latter proved much better in use. Now, while one swallow does not make spring, the change from steel to iron plate did not in this one instance cure the pin-hole trouble. Will add that the Upsala brand was hand dipped and very heavily coated. It was in every respect made in the old-fashioned way, and, as Merchant & Co. had stated, there had evidently been no expense spared in its manufacture.

"In regard to the theory that the difficulty is due to careless washings of the black plates, which permit some of the pickling acid to remain on the surface, and keep up corrosion after the plate has been tinned, will say I cannot see how acid can be retained to that extent. It is the opinion of our Mr. Pritchard, who has given the matter a great deal of attention, that pin holes come at points where the black plate has taken no tin. He argues that if the black plate is made bright at all points so that the tin will properly adhere there will be no pin holing. But there may be causes existing in the black plate that prevent the pickling acid from making certain points bright. It was the theory of Herbert Sutton of Swansea, Wales, as I now remember, that a certain graphite formation in the black plate was the cause of the pin-hole trouble. He argued that tin would not adhere to that graphite formation. He further held that the tin coating might cover it by continuity, and later, when in transportation, the jar of the cars would shake off the thin coating of tin, over, but not adhering to, the graphite formation. Now, whether the above theory is true or not, there is one thing to my mind that is clear, and that is if the black plates have spots to which the tin does not adhere, the pin-hole trouble will come as a result.

"I have sometimes thought that there was a disposition on the part of the makers on the other side, and the importers on this side, to mystify the pin-hole trouble, for the sake of claiming that it was something for which the makers ought not to be made responsible.

"I have been told that the English Government at one time offered a large amount of money for the discovery of the cause and cure of the pin-hole trouble. But whether that is so or not I do not know. However, if it is the mystery that it is claimed to be by some, would it not be a good plan for the United States Government to take immediate steps to investigate the pin-hole trouble and discover if possible the cause, and provide a cure?"

The report comes to us from Chicago that the Phoenix Iron Company of Phoenixville, Pa., have taken a contract for the erection of an observatory tower, to be built near Lincoln Park, in that city. The

dimensions of the tower are 87½ feet square at the base, 40 feet at the top and 350 feet in height from the ground to the platform in the apex. Two elevators are to be supplied, each capable of carrying 25 persons at a time. Charles H. Merrill is named as the inventor and promoter. The tower is to be of tubular construction, braced throughout. This scheme has no connection with the World's Fair in any way, the proposed location being in the northern part of the city, while the fair grounds are in the southern part.

### Ocean Cable to Africa.

The cable that is to be laid between Senegal and Pernambuco has been shipped from England, and is now on its way to the African coast in the British steamship *Silvertown*. It was constructed by the Telegraph Works Company of London, and a number of recent inventions have been used in its construction. There have been many improvements in cable making since the first Atlantic line was laid, 34 years ago, by Cyrus W. Field and his associates. The cable to run between Senegal in Africa and Pernambuco in Brazil was taken aboard coiled up in three tanks and ready for paying out at the bow end of the vessel, not at the stern, as was formerly the custom. The cable is of varying thickness, ranging from 2½ tons per knot to 4½ tons, according to the depth of the water in which it is to be laid, while the shore ends weigh about 15 tons per knot. At Senegal the shore end is to be covered by a hut and left in charge of an electrical engineer, who will be in communication day and night with the cable-bearing ship. Signals will be exchanged every five minutes during the whole operation of laying the cable to Brazil. In the deep sea the cable will be paid out at the rapid rate of 10 knots an hour, though large allowance must be made for stoppages through impediments 1000 fathoms deep. According to the engineer in charge, the line will be laid and the *Silvertown* back in England before the end of the month of July. Aboard the steamer there is a large staff of engineers and assistants, who work in four-hour shifts and then have eight hours off. The strain upon them while on duty is very severe.

The cable itself, which was made on the Thames, is an interesting piece of work. The communicating part is in the center, and consists of a number of copper wires, firmly embedded in gutta percha, which is a non-conductor. Round the gutta percha, as a protection from rocks and sea monsters, is a band of steel wires, covered with a resinous coating to prevent corrosion. The utmost care is taken to preserve the complete continuity of the electrical circuit through the whole of the 2165 miles of the cable.

The British Board of Trade returns for the past four months of this year show an increase of imports of £3,828,492 as compared with the corresponding four months of 1891, nearly the whole of which increase is in articles of food and drink. The exports for the same period exhibit, on the other hand, a decrease of £7,533,647, as compared with the corresponding four months of 1891, of which decrease £5,871,535 is in articles manufactured or partly manufactured.

A new profession has come into existence. Five years ago the irrigation engineers of the United States were few and scattered. They were mostly importations with Anglo-Indian experience. To-day there are almost as many irrigation engineers as there are mining engineers in the extreme Western States. An irrigation college is one of the projected enterprises inspired by the changed conditions in California.



### The Mason Hand Lathe.

The Mason Hand Lathe Company, Des Moines, Iowa, are manufacturing a hand lathe for cutting threads on steam, gas and water pipes. An illustration of this tool is given herewith. It is claimed for this lathe that it will cut a thread on a pipe in size from 1 to 6 inches by hand as quickly as the same could be cut by an engine lathe. It will cut the thread with the standard taper and will make a nipple of any length. This lathe has no dies to break, and there are no bushings to change in cutting different size pipes. The lathe is secured to the pipe by a universal chuck, and to change from a 2½-inch pipe to a 6-inch pipe requires but a minute's time. It is made in two sizes, cutting from 1 to 2 inches and from 2½ to 6 inches. Another size, to cut from 6 to 12 inches inclusive, is now in course of preparation. All parts are made of the very best steel. Although the Mason lathe has been on the

highly important by the numerous authorities quoted. Mr. Fernow is peculiarly fitted to conduct such an investigation, having made a study of the subject of forestry for many years. The report which has just been issued is illustrated with numerous cuts, largely graphic presentations of the compressive strength and specific gravity of various kinds of timber.

WE HAVE RECEIVED a copy of the annual report for the year 1891 of John C. Smock, State Geologist of New Jersey. The volume contains the usual administrative report, which is followed by a preliminary paper on "Drift or Pleistocene Formations of New Jersey," by Prof. R. D. Salisbury; next a paper on "Geological Work in Southern New Jersey," by C. W. Coman; a paper on "Water Supply and Water Power," by C. C. Vermeule; next a report on "Artesian Wells," next a paper, entitled "A Review of Artesian-Well Horizons in Southern New Jersey," by Lewis Woolman; next "Passaic River Drainage," by Geo. W. Howell. This is followed by notes on the active iron mines of New Jersey, by George Jenkins, giving particulars of the work done on each mine during the year 1891. The mineral statistics published in connection with these notes give the production of iron



THE MASON HAND LATHE.

market but a short time, the manufacturers state that it has given satisfaction where ever used.

### Trade Publications.

WE HAVE RECEIVED from the B. F. Sturtevant Company, Boston, Mass., a large, beautifully illustrated book of 132 pages, tastily bound and entitled "500 Representative Buildings Heated and Ventilated by the Sturtevant System." Its object is distinctly implied in its short and pithy introduction, which reads: "The high character of the buildings herein illustrated betokens the quality of the system by which they are heated and ventilated. Most of the illustrations are from specially prepared pen and ink sketches, printed in colors and forming, with their excellent accompanying testimonials set in carefully chosen type, a succession of most pleasing pages. The entire work is indicative of the scope and success of the Sturtevant System, which by means of a fan acts positively to force air in all parts of a building. The book is designed for distributing among architects, heating and ventilating engineers and others desirous of obtaining information regarding the system.

B. E. FERNOW, Chief of the Forestry Division, Department of Agriculture, has just issued part first of his preliminary report on "Timber Physics." This is treated under several heads: 1, "Need of the Investigation;" 2, "Scope and Historical Development of the Science of Timber Physics;" 3, "Organization and Methods of the Timber Examinations in the Division of Forestry." The investigations, which are started under the authority of the Department of Agriculture, on the subject of Timber Physics, give great promise in this volume of attaining high practical value. The need of the investigation seems to be regarded as

ore during 1891 at 551,358 tons, against 552,996 tons in 1890. The zinc ore mined amounted to 70,032 tons in 1891, as compared with 49,618 tons in 1890, the year 1891 having been the year of largest production by far in the history of the mining of zinc ore in the State. A catalogue of the publications of the Survey terminate the report.

AN ADVANCE COPY of the second edition of a Dictionary of Electrical Words, Terms and Phrases, by Prof. Edwin J. Houston, has just been received from the publishers, the W. J. Johnston Company, Limited, Times Building, New York City. The books bears very little resemblance to the first edition, which was published in 1889, and which is now so familiar to electrical readers. It is practically a new book, as it has been entirely rewritten and revised. The book is an octavo and contains 562 double-column pages printed on heavy paper. The type used is such that the titles stand out most prominently on the page. The definitions are given in two styles of type, the larger being used for the definitions proper, while the descriptive matter of a more general nature is given in a smaller face of type. The illustrations are 570 in number, and cover a very wide range of electrical apparatus. Definitions are given under about 5000 distinct titles, and nearly as many more titles are entered for the sake of giving cross references to other titles under which their definitions may be found.

One of the features of the last day's entertainment given to the Mechanical Engineers visiting San Francisco was the display by a manufacturing establishment of a 1½-inch cable of a total weight of 73,000 pounds, said to be the longest wire cable ever made for cable road purposes. The cable reel was drawn through the principal streets by 60 heavy truck horses.

### Coal Handling Plant.

The Link Belt Engineering Company, Nicetown, Pa., have been very prominent of late years in the department of coal-conveying systems. Their latest achievement in this line is the new plant for the coaling station of the Philadelphia and Reading Railroad Company, at Lehigh avenue, Port Richmond, Philadelphia, which was completed and put into operation about two months ago, and was finally turned over to the railroad officials last month. The work presents some noteworthy features as being the most recent development of its class, and the first machine ever constructed which combines the handling of coal and a bes, these operations having been hitherto performed by separate arrangements. The fact of manila rope being used on it for the transmission of power in place of leather belting or line shafting, although it has been previously used in other constructions by the company, is yet somewhat of a novelty in this country, and is one of their specialties. The coaling station in question was designed by the company and constructed at their Nicetown works. It has been built for the purpose of coaling the engines of the Philadelphia and Reading Railroad Company which are used in connection with the transport of coal and freight to and from the docks at Port Richmond; also has a capacity of 120 tons an hour, handling any description of coal, from dirt to steamboat, with equal facility. The station has a total length of 280 feet and is 14 feet 7 inches wide. The trucks laden with coal from the docks or store are brought alongside the station and discharge their contents directly into an open chute below the tracks; from the chute the coal is carried by buckets on an endless chain up an incline 95 feet long to the top of the station, and then transferred horizontally, the conveyors depositing the coal into a series of pockets on the standing frame work, nine in number, each with a capacity of 50,000 pounds. From these pockets the fuel is conveyed as requisite by means of small swinging shutles into the tender, the whole operation being performed with the utmost ease and celerity. While the tenders are being filled the engines dump their hot ashes directly into sunken pockets, beneath the tracks, of which there are six on each side of the conveyor, which pockets empty into another series of conveyors, working up an incline about 173 feet between centers placed above the coal conveyors, and dropping the ashes into a large steel pocket, occupying about one-third of the frame work, with a gross capacity of 3250 cubic feet, from whence they are shot into cars and carried away. The system is an improvement in and modification of other coal conveyors previously erected by the company in various parts of the country. One put up by them at Rondout, N. Y., for the Delaware and Hudson Canal Company, is now transferring 1000 tons a day from lighters, the coal being dug out by the buckets automatically.

The Chicago Shipbuilding Company launched the steel steamship Cadillac on the 24th ult. This ship is built for the Iron Cliffs Company of Cleveland, Ohio, and will be used for carrying ore from Lake Superior mines to lower Lake ports. Its length between perpendiculars is 230 feet and over all 250 feet. It has a 37 foot beam and 19-foot hold, and has a measurement of 1500 tons. The hull is of steel and modeled for speed and carrying capacity. It has triple expansion engines of 15, 25 and 42 inches, with a 30 inch stroke. The boat has been in process of construction since January, and is expected to steam out of Chicago in less than six

weeks from this time. Work will at once be started on another steel steamship on the dock which the Cadillac has left. Its length will be 287 feet, breadth of beam 41 feet, depth of hull, 24½ feet. It also will have triple expansion engines, but will be intended for general trade. The Minnesota Steamship Company's new vessel, the Maritana, is nearly ready for launching.

#### Canadian Iron News.

Local capitalists are organizing a company at Toronto, Canada, for the purpose of building a blast furnace. The capital has been fixed at \$1,000,000, of which one-half will be paid up. Among the directors are Elias Rogers, Robert Jaffray, J. K. Kerr, S. H. Jones, John I. Davidson and H. N. Baird. One of the stockholders of the company is George A. Cox. Before beginning operations the projectors of the company are desirous of securing some concessions from the Canadian Government, the provincial authorities and the city council. What is needed from the Dominion Government is an alteration of the terms upon which a bounty of \$2 per ton is paid upon all pig iron manufactured in Canada. This privilege can only be secured if everything used in the manufacture of the iron is Canadian. A smelting works in Toronto will have to depend upon Pennsylvania coke. The Dominion would be expected to pay the bounty without prohibiting the use of the most available coke. The provincial and city authorities would be expected to at least remit taxes, if not to extend more substantial aid to the enterprise. There is not only a bounty of \$2 per ton on all pig iron made in Canada up to January 1, 1898, but a protective duty of \$4 per ton is also levied on all pig iron imported.

The iron ores which would probably be used in this furnace are described in a pamphlet issued by T. D. Ledyard of Toronto. The deposits are located in the township of Snowdon, county of Haliburton, Ont., only 110 miles from Toronto, 150 miles from Hamilton and 220 miles by rail from Buffalo. The ore found is principally magnetic, of Bessemer quality, and the general trend of the deposits is northeast and southwest. A report by Charles Simmons, civil and mining engineer, says that "enough is known as to the quantity to make it reasonably certain that the ores of this region will afford ample scope for mining and a production limited only by the demand." The quality is shown by the following analysis:

No.	Metallic iron.	Phosphorus.	Sulphur.	Silica.
1	61.48	0.01	0.16	...
2	62	Trace.	0.06	1.7
3	62.57	0.025	Trace.	...
4	63	Trace.	0.025	3.1

It is further stated that not only has no titanium been found in these ores, but that, owing to the proximity of intercalated beds of limestone, they will be found inclined to be free fluxing in the furnace.

The Belmont Bessemer Ore Company of 29 Broadway, New York, have leased the Belmont Mine in this vicinity, and are now building a railroad to it, which they expect to have ready for operation in June, when they will put a large force to work mining and shipping the ore. Analyses of this ore show it to be of very high grade, the metallic iron in nine analyses ranging from 64.26 to 70.326, while the phosphorus shows from a faint trace to 0.229, the sulphur from a trace to 0.042 and the silica from 0.875 to 4.95.

A singular accident occurred at the Edgar Thomson Steel Works about 5 o'clock on the morning of the 28th ult., by which two men were killed and several others rendered unconscious by a shock from the electric light wire in the black-

smith shop. A number of men were working on a traveling crane in the shop. The boom came in contact with the electric light wire and cut through the insulation. In an instant the full force of the current was conducted along the iron framework of the crane, and all the men in contact were knocked insensible. A panic ensued among the other employees, but as soon as the cause was ascertained the current was shut off, and a rush was then made to assist the prostrate men.

#### Troy Malleable Iron Works.

It is expected that the new plant of the Troy Malleable Iron Works, to be erected in the northern section of West Troy, N. Y., between the New York Central and Hudson River and the Delaware and Hudson railroads, will soon be under way. Plans and specifications for the erection of the plant have been completed by Architect Harry P. Fielding and notices have been sent to contractors and builders, requesting them to figure on the cost, which it is estimated will approximate \$100,000.

The land on which the buildings are to be located was purchased from the Boutwell estate. The work of construction will be commenced as soon as the contracts are awarded and will be pushed to completion as rapidly as possible. When the plant is established it will add greatly to the prosperity of the entire section in which it will be located. The new buildings will face toward the south and will be of brick, one story in height. On the front will be a handsome main office of pressed brick, 40 x 60 feet, and adjoining it on the west will be a fire proof building of about the same dimensions, in which to store patterns. In all there will be 11 buildings.

The main foundry will occupy the center of the lot in the rear of the main office, and in dimensions will be 75 x 427 feet, with three ells, each 75 x 375 feet. On the east will be the annealing room, a building 80 x 450 feet, having in close proximity, between it and the main foundry, the hard-rolling room, trimming room and engine and boiler room.

Between the buildings there will be passageways, sufficiently spacious to permit the laying of tracks connecting with the New York Central and Hudson River and the Delaware and Hudson railroads, to be used for loading and unloading purposes. The foreman's office will be in the rear of the main office and in front of the foundry building. When completed, it is expected that the plant will be the most extensive of its kind in the country. In the plans provision is made for the erection of a large building on the west of the main foundry and another in front of the annealing room at a later date. The buildings will be fully equipped with all appurtenances pertaining to the trade.

William Griffith of Scranton, Pa., has published a very elaborate tabular estimate showing the approximate quantity of coal in the several districts of the Northern anthracite coal basin of Pennsylvania, usually known as the Wyoming and Lackawanna coal fields. Mr. Griffith is an engineer and geologist of experience in mining matters in that district. He explains in connection with the tables the method of computation which he has followed in making his calculations. He figures that at a production of 24,000,000 tons per year the whole basin will be exhausted in about 99 years. The actual production of this district in 1891 was 23,629,083 tons. The approximate workable area of the coal field is 505,935 acres. The approximate quantity of solid coal originally in place before any was mined was 5,057,808,560 tons. The approximate

number of tons produced to January 1, 1892, was 383,244,421 tons. The approximate quantity of coal wasted, included culm or wasted coal at 20 per cent. of production, has been 76,648,478 tons. The approximate quantity of solid coal in place in the unworked area is 4,408,073,200 tons. The approximate future production for unworked areas, based upon the present yield per foot per acre, and present prices, mining methods, &c., including the thin seams as minable, is 2,374,194,600 tons. The duration of some of the coal beds is placed at a much longer period than others; for instance, the Wilkesbarre and Plymouth district at present rate of production is calculated to last 127 years; the Pittston district 81 years; the Scranton district, 53 years; the Jermyn district, however, is put down at only 14 years and the Archbald district at only 21 years.

#### The Canadian Canals.

Invitations are to be issued to the New York steam yacht squadron to hold its annual review for 1893 on Lake Michigan, in the vicinity of Chicago. The following table from an official source gives the dimensions of all the Canadian canals on the route:

Lachine Canal—	
Length of canal, miles.....	8
Number of locks.....	5
Dimensions of locks, feet.....	227 x 45
Depth of water on sills, feet.....	9 to 16
Beauharnois Canal—	
Length of canal, miles.....	11½
Number of locks.....	9
Dimensions of locks, feet.....	200 x 45
Depth of water on sills, feet.....	9
Cornwall Canal—	
Length of canal, miles.....	11½
Number of locks.....	6
Dimensions of locks, feet.....	200 x 45
Depth of water on sills, feet.....	9
Forrau's Point Canal—	
Length of canal, miles.....	8¼
Number of locks.....	1
Dimensions of locks, feet.....	200 x 46
Depth of water on sills, ordinary level, feet.....	9
Rapid de Plat Canal—	
Length of canal, miles.....	4
Number of locks.....	2
Dimensions of locks, feet.....	200 x 45
Depth of water on sills, feet.....	9
Galops Canal—	
Length of canal, miles.....	7¾
Number of locks.....	3
Dimensions of locks, feet.....	200 x 45
Depth of water on sills, feet.....	9
Welland Canal—	
Length of canal, miles.....	26¾
Number of locks.....	25
Dimensions of locks, feet.....	270 x 45
Depth of water on sills, feet.....	14

#### Two Mammoth Bridge Girders.

The Boston Bridge Works at Cambridge made a notable shipment recently in the shape of the steel bridge girders to be placed over Southbridge street, Worcester, for the Providence and Worcester division of the New York, Providence and Boston Railroad. The two girders, each 95 feet 8½ inches long, were put together in the shop and shipped in single pieces. Each girder is 9 feet deep, too wide to safely lie flat on a car. They were therefore loaded on edge, each on three long flat cars. Each girder weighs 57,715 pounds.

The bridge structure will be 17.4 feet wide, and will be supported by these two girders, standing on edge, and resting on stone abutments. Each end of the girder rests in a "shoe plate" 24 inches wide, and the support upon each corner of the bridge is 33 x 24 inches.

One end of each girder is to be firmly fastened to the abutment, while the other rests free on a series of rollers, to allow for the changes in length of the metal from variations in temperature.

An interesting feature in the construction of this bridge is its floor plan. The



foundation is a series of steel V shaped troughs, side by side, lying transversely to the tracks and resting in sockets bolted to the girders. The troughs are bent at right angles and are about 18 inches deep.

These are to be filled with cement or concrete, and over this will be placed the material of an ordinary roadbed. The result is a thorough protection of the bridge floor from fire or storm, the deadening of sound and the prevention of the dropping of water or cinders on the highway below.

The V shaped form of floor construction has been adopted by this establishment, as it gives a rigidity and permanence not possible with other forms, and involves only flat and right-angle materials—thus avoiding extra expense in rolling plates.

So far as known these girders are the largest ever shipped in New England.

### The Mining Engineers' Meeting.

The sixty-second meeting of the American Institute of Mining Engineers, which was to have been held at Plattsburgh, N. Y., on the 21st inst., has been postponed for one week, and will begin on Tuesday evening, June 29. This change of date has been made in consequence of the offer of the manager of the Hotel Champlain, situated at Bluff Point, about three miles south of Plattsburgh, to open the hotel in advance of the regular season for the special entertainment of the institute, provided the date of June 28 could be substituted for the earlier date first announced, at which time it would be impossible to have the hotel open. Communications and inquiries concerning local arrangements may be addressed to A. L. Inman, Plattsburgh, N. Y., acting chairman of the local committee. Railway tickets may be taken for Bluff Point station on the Delaware and Hudson Canal Company's railroad. Among the subjects of special interest to be considered at this meeting will be the crushing and granulation of ores and a continuation of the discussion on magnetic concentration. The excursions connected with the meeting will comprise visits to Port Henry, Crown Point, Mineville, Lyon Mountain, and a trip in the Adirondack wilderness.

### Canadian Ship Railroad Scheme.

A Montreal dispatch states that a great scheme has been launched by a number of prominent Canadian capitalists to connect the Georgian Bay and Lake Ontario by a mammoth ship railway. E. L. Corthell, an eminent engineer of Chicago, who was associated with Captain Eads in the Tehuantepec ship railway project, has been consulted by the promoters, and has given his opinion that the scheme is thoroughly practical. Mr. Corthell has just returned from a thorough inspection of the proposed route along the small divide between the two bodies of water from near Collingwood, on Georgian Bay, and the neighborhood of Toronto, on Lake Ontario, a distance of about 66 miles. He expresses the opinion that there could not be found anywhere a strip of country better adapted in easy grades for a natural route.

The roadbed, it is said, will be 50 feet wide and will have six parallel steel tracks. The original estimate of cost of the work was \$15,500,000. The engineer's inspection has convinced him that the sum will be ample to construct and put in operation a ship railway between these two points to carry vessels up to 5000 tons burden. The building of the road he is convinced would compel the enlargement of the lower canals. It is utterly impossible, he says, to provide for the enormous commerce of the lakes by any possible enlargement of the Erie Canal, and the best and cheapest

route to the seaboard is by the St. Lawrence River, of which the ship railway will be an essential part. The scheme, it is believed, will be heartily supported by the Northwest and the Western States. A company known as the Hurontario Ship Railway Company has been organized to undertake the project, and several of the promoters will shortly leave for England to interest English capitalists in it.

### NEW PUBLICATIONS.

WALDEN'S STOVE TRADE DIRECTORY, containing a list of stove foundries in the United States, also a list of stove manufacturers and dealers, house furnishings and tinware dealers in the principal cities. C. C. Walden & Co., Vanderbilt Building, New York; cloth; price, \$3 per copy.

For a long time past the stove trade of the country has felt the want of a directory giving not only the names of the various stove manufacturers, but also the makers from whom repairs for the various stoves, ranges and heaters turned out could be obtained. With a view to meeting this well-defined requirement of the trade C. C. Walden & Co. of this city have just brought out the above-named book. It is of a size convenient to handle, easy of reference and is arranged in a manner which gives striking evidence of a desire to fully cover the ground while consulting the convenience of the trade. The work is divided into what may be designated as four chapters, the matter in each being similarly arranged. The opening chapter, or section, which occupies 50 pages, is devoted to the stove foundries in New York State arranged by cities, together with a list of the manufacturers classified according to the goods made. The chapter also presents the names of the stove manufacturers in combination with a list of dealers in stoves, tinware and house-furnishing goods in the principal cities of the State. Probably the most interesting feature of the work, at least to the stove and furnace dealer, is the alphabetically arranged list of stoves and the names of concerns supplying repairs for them.

The second chapter is devoted to a list of stove foundries in the New England States, the third to stove foundries in Pennsylvania, New Jersey and the South, while the fourth division of the volume gives the stove foundries in the Western States. While great pains have been taken to secure the fullest and latest returns, the completion of the book has been much retarded, the authors state, by the non-receipt of necessary information from manufacturers which was only furnished at a very late day. The authors say that in the next edition all these objections are expected to be overcome. The publication as a whole appears to be well adapted to the purpose, and is likely to prove a valuable addition to the literature of the trade.

THE ANNUAL STATISTICAL REPORT OF THE AMERICAN IRON AND STEEL ASSOCIATION FOR 1892. Paper, 83 pages. Published by the American Iron and Steel Association, Philadelphia. Price, \$3 per copy, or 12/6.

This report gives complete statistics of the production and prices of all the principal iron and steel products of the United States in 1891 and immediately preceding years; the prices of tin plates for a long series of years; the production of iron ore and coal in the United States; the mileage of railroads, and the construction of iron and steel ships in the United States; complete statistics for 1891 and previous years of United States imports and exports of iron and steel and imports of iron ore; immigration into the United States in 1891 and for many preceding years; a record of the deaths of iron and steel manufacturers

in 1891 and 1892, and statistics for recent years of the iron and steel and coal-mining industries of Great Britain, France, Germany, Belgium, Spain, Italy, Austria and Hungary, Sweden, Canada and other foreign countries. The report also gives a careful review of the present condition of the iron and steel industries of the United States and other countries. It is in many respects the most complete report the association has ever issued.

The JOURNAL OF THE IRON AND STEEL INSTITUTE, No. 2, 1891. Cloth, 389 pages, with an appendix of 77 pages; published in London by E. & F. N. Spon, 125 Strand, whose New York office is 12 Cortlandt street.

The contents of this book embrace the proceedings of the Iron and Steel Institute at their London meeting in October, 1891. Full reports are given of the papers read at this meeting and the discussions which followed. A number of the papers are illustrated by plates. Following the proceedings are copious notes on the progress of the home and foreign iron and steel industries. These are classified under the head of iron ores, refractory materials, fuel, production of pig iron, production of malleable iron, forge and mill machinery, production of steel, further treatment of iron and steel, physical properties, chemical properties and chemical analysis. Statistics follow covering matters connected with the iron trade of all the iron-producing countries of the world. This is the work of J. Stephen Jeans, the general secretary of the institute, who has distinguished himself by collecting an enormous amount of exceedingly interesting and valuable material. The volume as constructed by him is really a compendium of iron and steel progress throughout the world during the year 1891. It forms a work which should be in the library of all who are interested in the iron and steel industries and branches of trade connected with them. The publications of the Iron and Steel Institute under his direction are steadily acquiring a greater value from year to year. The present volume has as its frontispiece a steel engraving of the Duke of Devonshire, the first president of the institute, who died on December 21, 1891. The Duke was closely associated with, if he did not altogether take the most prominent part in, two events of notable importance in the history of the British iron and steel industries, the first being the establishment and consequent growth of the iron mining and iron and steel producing industries of the district of Barrow-in-Furness; the second, the organization and earlier development of the Iron and Steel Institute. He thus earned the right to the great distinction which has been accorded him in the iron and steel trades of Great Britain.

The United States turreted monitor Miantonomah, which has cost the Government \$3,000,000, had such rough experience on her way from New York to Annapolis that her seaworthiness is seriously questioned. Although the weather was favorable a heavy swell caused a dangerous leak. The Chicago, on the other hand, gives a good account of herself.

The State Department is officially advised of the conclusion of a treaty of commercial reciprocity between Austro-Hungary and the United States under the provisions of the McKinley act. Agricultural implements are reduced from 14 to 19 florins; iron and steel manufactures, reductions from 2 per cent. to 66 per cent. Iron ware, slight reductions; saws, files, rasps, screws, knives, scissors and other manufactures for agricultural and mechanical uses, 20 florins to 15 florins; brass and manufactures of brass, 10 per cent. to 60 per cent.

## THE WEEK.

Boatmen on the Erie Canal complain that the railroad is determined to take all the grain they can carry during the season of canal navigation, regardless of how low the rate is, for the purpose of driving the boatmen out of existence. When the canal opened many boats were unable to get a load at any price. A canal steamer with three consignments loaded with grain now gets only \$775. When the canals are closed the railroads would receive for the same quantity, say 31,000 bushels, from \$2000 to \$2480.

The Cape Cod Canal bill was defeated in the Massachusetts Legislature. Many argued that the scheme is impracticable, on account of shifting sand.

Factory Inspector Connolly has brought suit against the three principal iron companies of the Adirondack region to recover a total penalty of \$6000 for their refusal to obey the law requiring weekly payments of wages to employees which was enacted two years ago.

The gross earnings of the Pacific Mail Steamship Company for the year ended April 30 were \$4,131,417, of which over \$3,000,000 was for freight. The net earnings have fallen off slightly, owing to large expenditures in putting the company's fleet of 20 vessels in condition to meet the requirement of the new postal law.

The war department officials announce the completion at the newly established brass foundry at the Watertown Arsenal of an enormous bronze casting to form part of a carriage for the 8-inch steel rifles. The casting is irregular and difficult, and is said to be the largest ever attempted in the army workshops.

A fourth ocean steamship line across the Pacific has been established by the Northern Pacific Railroad Company, in co-operation with William G. Pierce of London, who originated the Canadian Steamship Company. The first steamer in the service left Hong Kong May 21, under the British flag, and departures will continue monthly.

The new rules for the steamboat inspection service, soon to be promulgated, will be much less onerous than those first proposed in what is known as the Frye bill.

The buttresses of "Trajan's Bridge," which are still to be seen on the Danube, are the remains of what was, in some respects, the most remarkable structure ever erected by man. It was a permanent structure carried on piers 150 feet high and 60 feet wide, comprising 20 arches, extending altogether 4470 Roman feet.

An entire cargo of coke for the use of the foundries at Monterey cleared from Norfolk last week for Tampico. It was Pocahontas coke, and comprised nearly 2000 tons.

The present value of the estate of Charles T. Tower, the extensive iron and coal operator who died in Philadelphia about two years ago, is given at \$3,102,058.

The Legislature of British Columbia has passed an act authorizing the acceptance of the offer made by her Majesty's Government of an advance of £150,000 for the purpose of crofter colonization in that country. While many in the United States are inclined to bar cut emigrants, the Canadians unite with the imperial government in making liberal offers of money to bring them in. The truth is, Canadians find themselves badly handicapped by the contiguity of the United States, with greater attractions.

London papers publish in detail the speech of Chancellor Goschen to an influential deputation who waited on the Marquis of Salisbury to learn the position of

the Government on the silver question. Mr. Goschen stated that while the Government had accepted an invitation from the United States to attend a conference "to examine what measures, if any, could be taken to increase the use of silver in the currency systems of the nations," the acceptance of that invitation would not commit other countries to any decision in advance with regard to any of the questions which might be submitted.

The Brotherhood of Locomotive Engineers, in session in Atlanta, Ga., last week, re-elected P. M. Arthur Grand Chief Engineer for four years. He desired to retire, having served 18 years, but the convention insisted upon his taking another term. He will be granted leave of absence, as he wishes to visit his native country, Scotland. A. D. Youngston was re-elected Assistant Grand Chief Engineer for two years, and Harry Hayes was re-elected Second Grand Engineer for four years.

The drought in Cuba is severe. In some districts rain has not fallen for several months.

The removal of the chain that guarded the entrance to the Panama Canal is presumably the last of the work.

The Spanish Government decides that henceforth no coasting trade can be carried on between Spain and Spanish colonies except in Spanish ships.

Letters from manufacturing firms in the United States addressed to Consul General Guenther of Mexico show that there is a general desire to introduce American goods into that country. In reply, Mr. Guenther advises the substitution of traveling agents for catalogues and price-lists. Manufacturers, he says, in selling their products in the United States "employ agents of intelligence, good address and thoroughly conversant with the language of the country. In order to get a foothold for their manufactured articles in this country it is necessary to pursue the same course, i. e., to send agents possessing the necessary qualifications, chief among which is a thorough knowledge of the language of the country (Spanish), and exhibit their goods, show their good points, &c.; in short, try to establish business relations here in the same manner as they are doing in the United States. Such agents will in most instances meet with success."

Barondess, who succeeded in extorting various sums from manufacturers in New York, under a threat to "call out" the employees, at last finds that a term of imprisonment for the offense is unavoidable. He was found guilty in the Court of Oyer and Terminer, but the General Term reversed the decision solely for errors of law. The Court of Appeals, in reversing the General Term order, affirms the conviction.

A deputation from the London Trades Council waited on Lord Salisbury two or three days ago to urge the passage of a law providing that eight hours shall be the limit of a day's work, the workmen to receive the same pay for the day of eight hours that they were paid for the longer period. Lord Salisbury "could not conceive the possibility," he said, "of the same wages being paid for eight hours' work as for work for a longer time. If manufacturers were fatally handicapped by restrictive legislation they would leave the country."

The grain exports of Philadelphia during the last six months have increased 74 per cent.

Last year's cotton crop of 8,652,597 bales was a phenomenal one, surpassing by over a million bales anything before known, but New Orleans papers of the

latest date are of the opinion that the crop of 1892 will touch the 9,000,000 mark. Already the quantity "in sight" exceeds the total of last year by 80,000 bales.

Austin Corbin has advanced a new theory in reference to steamship travel by the Transatlantic routes. He believes that every line should be equipped with fast steamships, but also with slower and less costly vessels. High speed is not always worth the money it costs.

The stockholders of the Anchor Line, which operates 15 steamers on the Great Lakes and which is controlled in Philadelphia, proposes to issue \$1,500,000 in bonds, to be used in adding three large steamships to its fleet and in improving its terminals at Erie.

The number of immigrants landed at the leading ports in the United States for April was 90,595, against 85,001 for the same month last year. The figures for ten months show an increase of more than 50,000, or from 401,238 to 453,958, in the number of immigrants arrived in the United States as compared with the same period last year. At this rate the total of 560,319 for the fiscal year 1891 will be increased to considerably more than 600,000, a number never before reached except in the three consecutive years 1881, 1882 and 1883.

A train loaded with 10,000 bushels of Kansas wheat arrived at New Orleans on the 23d ult., the first large shipment of wheat in bulk received at the Crescent City from a point so far west. New Orleans papers anticipate competition between the railroads in this grain business and that shipments will increase in proportion as the rates decrease. Exports from New Orleans already are at the rate of 1,700,000 bushels of wheat per month.

The steamship Mandarin, pioneer of the new Mexico line, sailed from Philadelphia on Friday with one of the largest cargoes of miscellaneous merchandise ever collected for the ports Hovium, Vera Cruz and Tampico. Another steamer will follow in two or three weeks.

The largest steel sailing yacht ever built in the East was launched last week from Lawler's shipyard at Boston. She is built of  $\frac{3}{4}$ -inch steel, is 90 feet in length at load water line and has a displacement of 165 tons.

Castle Garden in this city will be converted into an aquarium, under the direction of the Park Commission. The city is authorized to issue bonds to the amount of \$150,000 for this purpose. Steam pumps will supply the water.

The Russian Hebrew colony near Norwich Conn., is said to be bringing about an agricultural and industrial revolution in that section of the State.

A Norwegian steamer has arrived at Chicago with a cargo of fish and cod-liver oil, and will return with provisions.

Two engines, designed to be of extraordinary speed and power, are nearly finished at the Schenectady Locomotive Works. They will draw the Pennsylvania's fast passenger train, the New York and Chicago limited, between Philadelphia and Pittsburgh. One of the locomotives has eight wheels—American type—with cylinders 19 inches in diameter and 24 inches stroke, and driving wheels 78 inches in diameter. The weight of this engine is 123,000 pounds, of which about 81,000 pounds is on the driving wheels. The other engine is a two-cylinder compound ten-wheeler, of about 133,000 pounds weight.

One of the largest sugar refineries in Philadelphia is about to be removed to Cuba. The proprietor says that he cannot contend against the trust.



# The Iron Age

New York, Thursday, June 2, 1892.

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CHAS. KIRCHHOFF, - - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## The Western Wages Scale.

Next week the annual convention of the Amalgamated Association of Iron and Steel Workers will convene at Pittsburgh. At no time within years have the proceedings of this organization been watched with as keen interest as will be the case this year. The reasons for this are numerous, the principal one being that unless the Amalgamated Association sees fit to formulate a scale for governing wages in rolling mills west of the Allegheny Mountains for the year 1892-93, which will show a material reduction over the one that expires on the last day of this month, there will undoubtedly be a conflict between that organization and the manufacturers. When the Amalgamated scale comes up for discussion, it will be well for those who have it in charge to take into consideration the fact that the past year has witnessed a good many changes in the iron and steel trades which have not been beneficial to those whose capital is invested in these industries. On June 1 of last year Bessemer pig iron was selling readily at Pittsburgh at \$15.75 and \$16 per ton and gray forge at \$14, while to-day Bessemer iron is obtainable in Pittsburgh at \$14.25 and less, and gray forge is very dull at \$12.75. At this time last year 4 x 4 inch steel billets were \$25.50 per ton, while now they can be bought at \$22.25 per ton. With the wages scale fixed on a basis of 2 cents as a minimum, bar iron is selling at 1.55 to 1.60 cents for best quality, while bars in which old rails are used have been sold as low as 1.45 cents. In skelp iron the price has declined to such an extent that it can be bought at 1.50 cents for grooved and 1.60 for sheared.

We might go on down through the entire list of iron and steel products and show a similar state of affairs, but we believe the above is sufficient to show every one interested that the time has come when the employee must do his share and consent to a reduction in his wages. We have repeatedly pointed out in these columns that Western manufacturers cannot continue to pay \$5.50 for boiling, against \$3.25 paid in the East, and this also applies to other classes of labor, particularly heating and rolling, which are being done very much lower in the Eastern than in the Western mills. While Western manufacturers have never insisted on their employees working at the same rates as are paid in the East, they do not believe that there should be the wide difference in wages between these points that now exists, and it is well understood that they have determined on a change being made

this year that will put the two sections on a more equitable basis.

Reductions in cost have been made thus far without attacking wages to any extent. Labor-saving devices have been introduced wherever possible, surplus expenditures have been cut off, railroads have been successfully appealed to for freight reductions, and in every way efforts have been made to enable manufacturing operations to be continued in spite of the serious manner in which the high wages paid have affected the cost of production. In years past manufacturers without regard to locality were justly reproached for their disposition to cut wages first whenever a depression in trade set in, merely because it was the simplest way in which to reduce costs. This has been changed by the growth of workingmen's organizations and the establishment of wages scales for a fixed period. Under the new order of things wages is about the last item in the list to be touched. This, however, does not make labor so sacred that it is removed from all chance of being disturbed. On the other hand, it should cause labor leaders to be the more reasonable in accepting the situation and recognizing the power of the forces which are at work beyond the mere will or disposition of manufacturers. It would be far more agreeable to the latter if the condition of trade were always good and reductions in wages never had to be made.

From the best information obtainable, we are not inclined to believe that the Amalgamated Association courts a conflict with the manufacturers, as the experiences of last year in the East where attempts were made to enforce the Amalgamated scale proved such dismal failures. Even in Pittsburgh the Amalgamated Association is not the power it once was, as upward of a dozen of the largest mills in that city are being operated right along with non-union men and have been for years. We repeat, therefore, that the Amalgamated Association will do well to heed the signs of the times and agree to make such reductions in the new scale as the present conditions of the iron and steel trades demand and warrant.

The outlook for business is not improved, to say the least, by the reports of decreased railroad earnings which come from the West. The Union Pacific Railroad Company have laid off a large number of their mechanics at various points, along their entire system, assigning as the reason that it is necessary to retrench expenses. The officials of that company say that their line is not the only one in the West whose earnings have decreased rapidly within the last three months. *Per contra*, in a recent interview with Jay Gould, who has been spending several months in the West and Southwest, he is reported to have said that he is confident the coming year will be the greatest in the history of Western railroads. It is to be hoped that in this case he will prove a true prophet.

## The Copper Combination.

The announcement that American and foreign copper producers have effected a combination excites general comment. Its tone is, of course, unfavorable. Public opinion is opposed to combinations of every character, whether to restrict production or to fix prices. The result in either case is seen to be the same—that is, the tendency to lower prices is sought to be arrested, and therefore the consumer may be compelled to pay more than he would if the natural course of trade were unrestricted. Now, it is undeniably the fact that everybody desires to buy what he consumes as cheaply as possible. The lower the prices of such commodities may fall, the better is he suited. No matter how cheap an article may be, even if it is cheaper than ever before in the history of the world, the consumer is not satisfied but would be glad to push the price still lower if he could. A price is never so low but that buyers will endeavor to beat it. They also resent anything which interferes with this prerogative. The antipathy to combinations is thus perfectly natural. It is not necessary to educate the public in order to array general sentiment on that side of the question. There are self-constituted leaders of public opinion, however, who deem it their duty to incite greater hostility to combinations than has thus far existed. They work themselves up to a perfect fury when the subject comes athwart their vision, and grow so hysterical that they make themselves ridiculous. Such an instance is now before us. According to this authority the copper combination "is supposed to be of world-wide efficiency, reaching from pole to pole, and taking by the throat the consumers of all nations." The metaphor here is rather strained, but the meaning is plain. Is the copper combination really as bad as that? If all consumers, from pole to pole, should be obliged to continue to pay the present price for their copper, for it is not clear that the price can be advanced much, if at all, would the world be seriously injured?

The heartless doctrine is usually advanced against the formation of combinations among producers that in this way weak concerns are supported which ought to be crowded out; in other words, the law of the survival of the fittest should have full play. This position is untenable from every consideration, and from the consumer's standpoint perhaps most of all. It is not to his interest that strong concerns alone should be permitted to exist. If, for instance, two or three large copper companies should force prices down to an unprofitable point for all the rest, and drive them out of existence, is it reasonable to suppose that with competition thus narrowed the price of copper would be always kept at a low level? With the trade under such perfect control as it would then be, every attempt to start a competing enterprise could at once be crushed out. And with a sudden revival in all branches of trade, bringing about a greatly increased demand for copper,

would not prices be advanced out of all reason by the few producers left in the field? The same thing holds good in any other line of productive industry. The consumer would be likely to fare much worse in the long run by the concentration, of business in the hands of a few who are able to survive unrestrained competition, than he will through the operations of a combination which permits numerous producers to keep themselves alive during a dull period. If the greed of the members of a combination causes them to advance prices unduly the remedy follows swiftly. Others enter the field thus rendered inviting and prices give way. This has been the history of every combination. The only successful ones now in existence are those in which prices have been kept down to a reasonable figure. Further, the strict application of the law of the survival of the fittest would be destructive to great interests and to many communities of busy workers. The temporary depression of a branch of trade could thus be made to work irreparable damage. Weak concerns can grow strong, but they must have a chance. The development of fresh resources or the more fertile expedients of a changed management have in numerous instances made a small enterprise grow to be a power, but if it had been forced to the wall during a depressed period in its early life the original investors would have lost everything and a flourishing settlement would have gone to decay.

In the matter of combinations, as well as in everything else which surrounds or affects us, it would seem reasonable that discrimination should be exercised in applying severe criticism or condemnation. All are not equally reprehensible, nor are all equally defensible. But it is perhaps too much to expect of poor human nature, which rushes to extremes. One thing at least is very certain, and that is that no one denounces a combination in the benefits of which he participates.

#### Iron vs. Steel for Fire Boxes.

Considerable interest is being excited in iron and steel circles by the statement recently made that a prominent Western railroad has specified Low Moor iron for fire boxes in a number of locomotives recently ordered from an Eastern builder. The superintendent of motive power of the road, it is said, believes he will have less trouble with Low Moor plates giving out where impure water is used than with steel. He claims that the steel is liable to pit and crack under such circumstances. This is quite a remarkable step to take at this time. So many years have passed since the use of mild steel had completely superseded iron for such purposes in this country, that it was not supposed that the use of iron would ever again be heard of. "One swallow does not make a summer," and a single order like this for iron for fire boxes is hardly sufficient to form a basis for generalization, but the action of the railroad company in returning to the use of iron is made the subject of quite

severe comment in some of our contemporaries. They claim that it is a step backward. This may probably be true, but the results of the return to iron remain to be seen. The quality of steel used for fire boxes has been so greatly improved since steel was first adopted for this purpose that it is possible that the trial of iron will show it to fall far below the expectations of the company ordering it. One thing is pretty certain, and that is that there is very little danger of the return to iron becoming at all general among the manufacturers of locomotives or railroad officials. It may be necessary to inform the present generation of iron and steel consumers that Low Moor iron is an English brand.

#### The Silver Question.

The prevailing sentiment with reference to the free coinage of silver has undergone considerable change since the issue was pressed most vigorously upon Congress. It will be remembered that last autumn Robert Giffen was quoted in a London dispatch as authority for the statement that by February of 1892 the silver crisis so long impending in the United States would culminate in disaster. The prediction doubtless added to the apprehension already existing among foreign investors and financiers, so that American securities held in Europe were viewed with distrust. However that may be, large amounts were sent home for redemption in gold, giving increased volume to the eastward flow of the yellow metal from this country, despite the balance of trade was largely to the credit of this country on account of the extraordinary exports of grain to supply the deficiencies in Europe.

It is exceedingly instructive to observe at this time that scarcely a ripple of disturbance remains, and that with a sense of restored security purchases of American stocks and bonds on European account are resumed on a liberal scale, forming a conspicuous feature in Wall street. One immediate consequence is that the rates of sterling exchange are so much advanced that exports of gold from this side are no longer profitable, and the feeling in the market is that as the season advances the European demand is likely to broaden rather than diminish.

Quite recently in the lower House an attempt to provide either for unlimited coinage or for the coinage of bullion in the Treasury was frustrated on several occasions, the effort being to amend the Sundry Civil Appropriation bill with this object. In each instance the proposed amendment was ruled out of order, and this decision was as many times sustained by a strong majority, irrespective of party lines, on an appeal being taken. This caused a feeling of quite general satisfaction, because the belief was thus strengthened that the silver question was settled for some time. The revival of the issue in the Senate last week would excite some apprehension if it was not regarded

as almost entirely political in its occurrence at this particular juncture. What may come of the approaching international conference remains to be seen. The London *Economist* says it is certain to end in nothing.

#### The Cost of Collecting Checks.

The growth of business throughout the country and the establishment of banks in almost every small town have, in recent years, greatly increased the use of checks by merchants and manufacturers throughout the country in making remittances. Every jobbing house and every manufacturer of small wares finds that he is being burdened more and more with charges for collection on these checks. The matter has grown to such importance now that it seems to call for a change in the method of conducting business. We are receiving numerous complaints from jobbers and manufacturers concerning this feature of their business, and it seems desirable to endeavor to impress upon those who have occasion to send checks for small amounts that they include with these checks the amount necessary to pay for collection. It frequently happens that checks are remitted for bills as small as, say, \$2.50, on which the recipient must pay his bank a collection fee of 25 cents. This amounts to 10 per cent. on the whole remittance. It will be seen that it is a very heavy tax for a jobber or manufacturer to pay on the amount which he collects. Many lines of goods are sold so close to cost that margins are extremely small. If the retail merchant were to make a personal application of this matter and decide whether he would like to make a rebate on all bills he collects from his customers, he will possibly take a different view of this matter from that which he now holds.

There was, of course, a time in the past when the margin of cost was great enough, and the number of checks received from all parts of the country small enough, not to make this charge for collection a matter worth complaining about. Conditions, however, have changed so greatly that it is exceedingly desirable that a reform should be instituted in this respect. The present facilities for banking are very convenient in a great many ways, and add very much to the pleasure of doing business, but they should not be used to the disadvantage of the distributors of goods. This view of the question is not taken from hostility to the retail merchant, by any means, but it seems to be a question of justice in which the preponderance is on the side of persons who are obliged to bear the heavy burden of paying exchange. So onerous has this become that there is some discussion as to whether it would not be advisable for jobbers and manufacturers to take concerted action on the matter and endeavor to overcome the difficulty by refusing to accept any local checks whatever. This is an extreme step, however, and should not be taken unless it is found that it is not possible to bring about a reform in any other way.



### "The Last Slave State."

At a banquet of the San Francisco Chamber of Commerce its secretary, C. Leeds, closed a powerful speech with the words that California would cease to be the last slave State when competition in railroad transportation had been secured. The very fact that the merchants of San Francisco dared to listen to such a speech and to express their approval of its sentiments is in itself regarded as a wonderful evidence of progress. The oppression of the rule of the railroad ring is the topic most eagerly discussed by business men on the Pacific Coast. Every one has examples to cite of the arbitrary exercise of power, of the unblushing determination of grasping every penny which the traffic will bear. The producer as well as the distributor alike must make the best terms he can with the freight agent, who can be circumvented only in those rare instances when the goods can reach their destination by water or by wagon.

It is stated that in the early days of their struggles, Crocker, Stanford and Huntington found San Francisco merchants indifferent to their needs for help, and it is urged that they have reaped, therefore, only what they had sown. The business community of that part of the Pacific Coast is charged with a lack of enterprise which is claimed to be chiefly responsible for the loss in business which it has sustained. The merchants insist that the short-sighted policy of the railroad and its ally, the Pacific Mail, has led to the decline in business, while others hold that the vigor and enterprise of Portland and the Puget Sound ports have captured a considerable share of the trade.

That San Francisco has not alone relatively but absolutely fallen off as a business center is freely acknowledged by those who are best qualified to speak with authority and are most sincerely concerned in its welfare. We have been sorrowfully told that there is undoubtedly some truth in the charge that San Francisco merchants, as a body, display too little enterprise and vigor. But even when that admission is made and full weight is given to its influence, the decline in business must remain chiefly due to the sinister effect of railroad monopoly. The knowledge that every penny in his pocket is being counted before he is given a transportation rate is not conducive to enterprise with a farmer, manufacturer or dealer, and yet that is what practically is being done in California and justifies the statement that she will remain the last slave State until the reign of the railroad ring is over.

**Carnegie Armor Plate.**—A most successful test of an armor plate made by Carnegie, Phipps & Co. took place at the Indian Head (Md.) proving ground on the 25th ult. The plate was 9 feet long by 6 feet wide and 4 inches thick and was designated as nickel-steel broadside armor. It was part of the armor of the battle ship New York. The test took place under the direction of a board of army officers designated by Secretary Tracy. Commodore Folger was unable to be present however. Carnegie, Phipps & Co. were represented by Millard Hun-

sicker. Three shots were fired at the plate from a 4 inch gun and the shots had a velocity of 1470 feet. The Carpenter armor-piercing shells were used. The results of the tests were that not a single shot went through the armor and not a crack appeared on the surface. So impregnable was the plate that all the shells rebounded about 40 feet. It was the unanimous opinion of the board that the plate was equally as good as those furnished from Bethlehem.

### OBITUARY.

JOHN R. BUCHTEL.

In our last issue brief mention was made of the death of John R. Buchtel, which occurred at Akron, Ohio, on May 23. The following biographical notice is condensed from the *Cleveland Leader*:

Mr. Buchtel was a truly remarkable man. In early life his opportunities for obtaining an education were limited to the country district school, yet he made such a mark as a successful business man, and as a liberal giver to charitable, religious and educational institutions, as few indeed can claim. His impress has been firmly stamped upon Akron's industries, but his chief claim to the gratitude of his fellow-man is in the leading part he took in establishing the college which bears his name and the liberal bequests which have enabled the institution to take higher rank from time to time.

Mr. Buchtel was a native of Green township, now Summit County, Ohio, and was in his seventy-first year. When he had reached his majority, it is said, he could with difficulty write his name. He then began life for himself as a farmer. Later on he entered the employ of Ball, Aultman & Co. at Canton. In 1856, through loss by fire, the company having been forced to make an assignment, Mr. Buchtel took a leading part in putting the firm once more on its feet. In 1864, through his efforts, a branch manufactory was started by the Canton firm, and this is now the prosperous Aultman, Miller & Co. of Akron. Largely as a result of the establishment of the Akron branch of this mower and reaper firm have been located in Akron at least two other important industries, the Akron Iron Company and the Akron branch and headquarters of the Whitman & Barnes Mfg. Company. Mr. Buchtel was a director of the Canton firm of C. Aultman & Co., a director of the Akron Iron Company, of the Bank of Akron, of the Weary, Snyder & Wilcox Company, besides being connected in the many smaller business interests.

His latest business interest was, in 1877, the extensive purchase of Athens County mineral lands by the Akron Iron Company. This purchase comprises some of the most valuable coal lands in the United States. As a result of the purchase and the work of the company a prosperous town of 2000 inhabitants sprang up and was named in honor of the man most instrumental in its establishment. In all his extensive enterprises he maintained the most pleasant relations. The comfort and prosperity of his employees co-ordinated with his own success.

Mr. Buchtel accumulated a large fortune, yet he had comparatively little of it left when he died. Gathering wealth was to him a means and not an end. No church, of whatever denomination in Akron, has been built without a generous contribution from him. Besides these, several other institutions were aided by this generous man. His bequests at various times amount to nearly half a million dollars. He retained only his residence property on East Market street and some business interests, amounting in all to less than \$50,000.

## The Mechanical Engineers.—II.

### SAN FRANCISCO MEETING.

The following is a list of the members of the Society of Mechanical Engineers who participated in the excursion to San Francisco, many of them being accompanied by ladies:

Ashworth, D., Pittsburgh, Pa.  
Alden, G. I., Worcester, Mass.  
Andrews, Edward, Wilmington, Del.  
Boyd, J. T., E. Boston, Mass.  
Borden, T. J., Fall River, Mass.  
Betts, Alfred, Wilmington, Del.  
Bulkeley, H. W., New York.  
Cogswell, W. B., Syracuse, N. Y.  
Cotton, W. G., Boston, Mass.  
Daniels, Fred. H., Worcester, Mass.  
Francis, H. C., Philadelphia, Pa.  
Hibbard, Thomas, Boston, Mass.  
Hunt, C. W., New York.  
Hutton, Addison, Philadelphia, Pa.  
Haskins, H. S., Philadelphia, Pa.  
Higgins, M. P., Worcester, Mass.  
Hunt, R. W., Chicago, Ill.  
Hutton, F. R., New York.  
Hazard, V. G., Wilmington, Del.  
Jones, Washington, Philadelphia, Pa.  
Jacobus, Hoboken, N. J.  
Kirchhoff, C., New York.  
Knickerbocker, John, Troy, N. Y.  
Laforge, F. H., Waterbury, Conn.  
Lewis, Wilfred, Philadelphia, Pa.  
Monaghan, W. F., New York.  
Moore, D. G., Elizabeth, N. J.  
Miller, Fred. J., New York.  
Martens, F., College Point, L. I., N. Y.  
Power, F. M., Syracuse, N. Y.  
Parks, E. H., Providence, R. I.  
Roux, Ph., Paris, France.  
Rinman, G. O., Cincinnati, Ohio.  
Shepard, F. E., Denver, Col.  
Sharp, Joel, Salem, Ohio.  
Smith, George H., Providence, R. I.  
Scheffler, F. A., Cleveland, Ohio.  
Stearns, Albert, Brooklyn, N. Y.  
Smith, Gilbert S., Philadelphia, Pa.  
Torrey, H. G., New York.  
Trump, Charles N., Wilmington, Del.  
Wellman, S. T., Thurlow, Pa.  
Wiley, W. H., New York.  
Williamson, J. D., Philadelphia, Pa.  
Williamson, Wm. C., Philadelphia, Pa.

Wednesday, May 18, was devoted to an excursion to the Crystal Spring dam of the Spring Valley Water Company, which practically controls the entire water supply of San Francisco. A special train conveyed the party to San Mateo, a charming town of suburban villas, through the extensive grounds of which the engineers drove before proceeding along the Pescadero road to the Upper Crystal Springs reservoir. The carriages stopped again at the great dam, one of the largest monoliths in the country. Its construction was a bold undertaking, reflecting great credit upon the management of Charles Webb Howard, the president, and Hermann Schuessler, the chief engineer of the company. A drive of ten miles brought the party to a shaded spot, where an elaborate luncheon was served and a large number of speeches were made. The plan of holding a session under the great bay tree was abandoned, and the engineers returned to the city late in the afternoon, after having driven by the San Andreas dam and the Merced pumping station, where two handsome Risdon engines were inspected.

The evening found the engineers again assembled in the fine hall of the Academy of Sciences, the following papers being read:

"The Measurement of Power," by Prof. Thomas Gray of Terre Haute, Ind.;  
"Autographic Recording Apparatus for

Use in the Testing of Materials," also by Professor Gray; "Two-Cylinder vs. Multi-Cylinder Engines," by S. M. Green of Holyoke and G. I. Rockwood of Worcester; "The Elastic Curve and Treatment of Structural Steel," by Gus C. Henning of New York, and "Summary of Results of Principal Experimental Measurements of Performance of Refrigerating Machines," by Profs. J. E. Denton and D. S. Jacobus of Hoboken, N. J. Abstracts of these papers were printed in our issue of May 19.

Prof. F. R. Hutton, the secretary of the society, read committee reports on "A Standard Method of Testing the Efficiency of Locomotives," and "A Standard for Testing Flanges, Valves and Pumps."

Prof. R. H. Thurston, past president of the society, has written a letter, which was read, suggesting that subscriptions be asked for from the American engineering world for the erection at Colmar, Alsace, of a monument to the great French engineer and scientist, G. A. Hirn.

Thursday morning again brought an early start, the object of interest being the famous San Francisco resort, Cliff House, followed by a visit to the grounds and residence at Suto Heights of that public spirited citizen, Adolphe Suto, the originator of the great Suto tunnel enterprise for draining the ex bonanza mines of the Comstock lode, Virginia City, Nevada. The afternoon was spent at the Union Iron Works and the Pacific Rolling Mills.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., May 31, 1892.

The officers of the Pneumatic Disappearing Gun Carriage Company expect to complete their experimental tests on Thursday, at Sandy Hook, by firing 13 rounds. In their former tests they found less difficulty in firing with full than with light charges of powder. In the one instance the pneumatic appliances operate perfectly, but in light charges the disappearing movement was not so satisfactory. This they have corrected by the introduction of an automatic valve and other appliances to meet the difference between the full and light charges.

The firings on Thursday will be with 260 pounds of powder and 500-pound projectiles, and also with varying charges of a lighter weight of powder. The company expect after these firings to turn the carriage over to the Board of Experts for the 30-round test, which will determine the important question of acceptance.

The Committee on Ways and Means disposed of their tentative tariff bills to-day and will be ready to report them to the House as soon as the appropriation bills are out of the way. This will require at least another month. The committee are confident of promptly passing the bill, already printed in *The Iron Age*, radically reducing the duty on certain classes of iron. The only purpose of these measures is to agitate the tariff question pending the Presidential election. If Mr. Cleveland should be the nominee of the Chicago convention one of the cardinal principles of the platform will be tariff reform on the line of the Mills bill, supplemented by the Andrews bill striking at the iron industries.

The Senate Committee on Finance still adhere to their policy of non-action until the rest of the House bills have been received by the Senate and laid before them.

In the meantime both conventions will have met and formulated their platforms upon which the campaign is to be fought. The Senate expects to give great promi-

nence to the existing tariff, as against the attempt to reduce duties in some cases and repeal in others.

## San Francisco News.

SAN FRANCISCO, May 16, 1892.

There has been but little change to report in the general hardware and metal markets, which for the past two weeks have been much the same as previously reported. The demand for agricultural implements has been especially good, and, as in former weeks, is in striking contrast to the condition of things in many other lines of business. The state of the markets generally may be understood from the fact that the exchanges at the clearing house for the week just closed show a falling off of nearly \$3,000,000, a decline of about 20 per cent. as compared with the corresponding week last year. There is no doubt a good deal of this is to be attributed to the demoralized state of the mining stock market and the lessening of the speculative feeling; but enough remains to show that business as a whole this spring has fallen off sadly compared with other years. As I have said, this is not the case in the line of agricultural implements, owing to the bright outlook for the harvest, which continues on the whole to be excellent. In hardware proper there has been a fair demand, though, as in most other lines, profits are small and collections far from what they ought to be. There is an outlook for a better demand in building hardware, as building operations give promise of more activity than hitherto this year. Sales of merchant iron continue to be rather light, but with a prospect of improving.

In manufacturing we cannot report any very great activity outside of the agricultural implement works at Benicia, San Leandro and Stockton (where this has been one of the best years for some time), the rolling mills, and the Union, Radon and one other iron works. The majority of the foundries report matters very dull. As the labor troubles in this direction are settled, and as the manufacturers and employers have declared against boycotting, and have taken measures to enforce their war against it, we may expect that business in this direction will pick up as the year progresses. The approaching settlement of the hydraulic mining question is giving renewed hopes of a revival of the old time business in the hearts of foundrymen, as the closing of the hydraulic mines was a serious blow to many of our business interests. It is estimated that when in full blast they will give to the State \$10,000,000 worth of gold every year. Most of this, outside of a good percentage to capital, being spent for labor and material, and all ultimately coming to this city, profits, as well as everything else, would make a notable difference in many industries. At the Union Iron Works at present over 1800 men are employed. Work on Cruiser No. 6 is progressing well. The outside framing above the protective deck is all up, and the steel sternpost is complete. The battleship Oregon is well in frame. There are nine side armor plates on the Monterey, while others are being placed in position as fast as received. The electric lighting system of the vessel is complete. The Pacific Mail Steamship Company are having the Peru built here. She is nearly all plated, and will be launched very probably by June 5. There are 630 men employed on her hull and machinery. Her length is 345 feet, her beam 45 feet, her depth 29 feet. She will have a gross tonnage of 8800 tons. The engines are of triple expansion. The high pressure cylinder is 28 inches in diameter, the intermediate 41 inches, the low-pressure 70 inches, with a piston stroke of 48 inches.

The engines are of 2800 horse-power. The speed expected to be developed will be 15 knots. There are six main boilers, constructed of steel. This is one of the first fruits of the aid extended to American shipping by the previous Congress. It is not the last, and California industry will be benefited considerably by it. The existence of these ship works is largely due to the energy of one man, and with a few more like him California would be much farther ahead in the industrial race. We are gradually evolving industrial stability out of the preceding chaos, where the existence of any particular manufacture seemed to depend largely on its being sheltered by distance or by want of railroad communication from competition from the outside world. In the great iron works just referred to most of the steel and iron has had to be brought here by rail; but there is an enterprise now on foot which will probably render us in a year or so independent of outside sources for these indispensable articles. Our imports of tin plate continue to be large. We had 27,385 boxes per Ananurus and 20,767 boxes per Earls court. Our total imports to date have been since January 1 265,290 boxes by sea and a small quantity by rail. The market is weak at \$5.87½. It is said that most of what has come to hand has gone to consumers. Pig tin still remains nominally at 23 cents. A year ago we had to date imported about double the quantity imported to the present date.

Railroad imports of hardware and metals continue to increase. For the past two weeks they have been 98 cars. These have been made up of 10 cars of agricultural implements, 5 cars of iron, 28 of machinery, 2 of wire netting, 4 of stoves, 4 of wire, 1 of wagons, 3 of columns, 11 of hardware, 14 of plates, 2 of rakes, 5 of rails, 3 of pipe, 1 of chain, 2 of headers, 2 of safes, 1 of refrigerators; 65 000 pounds copper, 5194 pounds zinc.

The Mechanical Engineers were here received right royally. The editor of *The Iron Age* was the recipient of especial compliments on account of the benefits conferred on the iron and steel trades in general by his magnificent paper. Such an intelligent band of workers in those avocations where more especially iron and steel are brought into play, and where their use has become so well-nigh universal as to justly entitle this to the appellation of the "iron age," has been rarely seen in this city. They must have carried away with them a most favorable impression of the State, attired as she is at present in robes of green and with scenery agreeably diversified by the cheering hues of approaching harvest. They must have formed a most favorable impression of everything brought under their notice. Not only that, but they must have noted many things that will be among the solvable engineering problems of the future on this coast. They had a very hurried glimpse at some of the more interesting industries of the city and its vicinity, and in this respect I think that a brief résumé of some of the more important features of the iron and steel industries of the city would not be amiss. The data on this point are not easily obtained, nor are they very willingly given by the manufacturers. In fact, in the taking of the last census there was a great deal of trouble given by some manufacturers, who had to be threatened with the pains and penalties of the law before they would give anything, and then as the gentlemen employed in the collection and compilation of the statistics were neither professional nor statistical experts, the information thus gathered is not likely to be as valuable as it otherwise would be. Of course a very closely approximative method of arriving at these facts must be taken in consideration, the actual quantity of iron and steel consumed, and estimating the value of



their products at an average of what they would bring in the market. In this matter we have the following data to work on:

Imports, 1891. Foreign.	
	Tons.
Pig.....	12,383
Scrap.....	26,662
Bar.....	1,835
Total.....	40,887
Domestic.	
	Tons.
Eastern pig.....	2,040
Puget Sound pig.....	100
Oregon pig.....	1,849
Bar, &c., by rail.....	11,140
Total.....	15,129

This makes a grand total of 56,016 tons of iron. To it must be added 24,000 tons of scrap gathered on this coast and we have used altogether 80,016 tons. To this should be added 5000 tons of tin. Then we have steel, which may be given as follows:

	Tons.
Foreign.....	6,155
American, by rail.....	8,719
Total.....	14,874

There is also a small quantity of steel imported from the East by sea.

We have here the foundation for data as to the total values of the leading industries in this line. If we estimate the values at an average of 5½ cents a pound, we have a total of a little over \$10,000,000 for the values of the industries of San Francisco and Oakland and vicinity where pig, scrap, bar and sheet iron are used. We then have the shipbuilding works, where over 1800 men are employed. We must add about \$2,500,000 for the annual value of the cruisers, &c., turned out here.

We have a slight agricultural implement manufacturing business in the city, and outside of its boundaries quite a large one; perhaps \$200,000 covering the value of that pertaining to the city. Our electrical machinery works return a value of about \$150,000, while the product of our wire and wire rope factories will reach nearly \$1,000,000 annually; all of the other, varied and interesting as they are, will be included under our general summation. Putting all these items together gives us a total of \$11,350,000. Our record would be a great deal better if it were not for the dullness of the past couple of years and the fact that railroad tariffs restrict the field of operation in which our manufacturers work, although in some instances they act as a protection much the same as an import duty would. But once you get to a certain distance from the city the local tariff more than offsets the overland one. If the efforts which are now being made to reduce the local tariff should be successful, San Francisco manufactures will have entered on a new era, a consummation devoutly to be wished. This matter of our industries, especially the ones in which *The Iron Age* is more particularly interested, is an attractive one, and with your permission I will revert to it again as opportunity offers.

The foreign trade returns of the Dominion of Canada for the fiscal year ended April 30 show an extraordinary increase of exports contrasted with last year. The figures of the two periods are as follows:

1892.....	\$89,435,793
1891.....	77,452,314
Increase.....	\$11,983,479

The imports for the 10 months were valued at \$89,876,146, as against \$89,490,399, or an increase of \$385,747. The duty collected during the ten months amounts to \$16,059,722, a decrease of \$2,641,146, which is considerably less than the loss of duty by placing sugar on the free list.

### Important Meetings.

(By Telegraph.)

PITTSBURGH, PA., June 1, 1892.

The Association of Iron and Steel Manufacturers are holding a meeting at their headquarters at Room D 10, Times Building, Pittsburgh, to-day. The association convened at 10 a.m., J. G. Battell, of Piqua, Ohio, acting as chairman, and John Jarrett secretary. Matters of considerable interest are under discussion and the question of wages to be paid for labor in sheet mills will be taken up; a scale has been formulated and will be presented to the association for adoption. A committee will also be appointed to confer with the officials of the Amalgamated Association when the wage scale comes up for final settlement during this month. The Tinned Plate Manufacturers' Association of the United States will also meet in the same place to-day, commencing at 2 p.m. At this meeting John Jarrett will be elected secretary of the association, and considerable other business is expected to be transacted. At the same time to-day the National Association of Galvanized Sheet Iron Manufacturers will also meet at the above place, and it is expected that arrangements will be made by which the three organizations will work together in harmony, but no consolidation will be made. Each organization will retain its own separate officers, with the exception of the position of secretary, which position will be filled by Jno. Jarrett for the three associations. Other business relating to the manner in which the different associations will contribute toward the expenses of the organization will be acted upon, and considerable business is expected to be transacted. Prices will not be touched on in any way.

### Coke Freight Rates Reduced.

At a meeting of the Pittsburgh Committee of Freight Agents representing the various lines leading from that city, held on the 26th ult., it was decided to make a reduction on freight rates on coke from the Connellsville region to Pittsburgh and points west of Pittsburgh. The following are the new rates, which are from 5 to 10 cents per ton lower than the old schedule, in tons of 2000 pounds, taking effect on June 1:

Ashtabula, Ohio.....	\$1.65
Beaver Falls, Pa.....	1.25
Brier Hill, Ohio.....	1.25
Cleveland, Ohio.....	1.65
Coalburg, Ohio.....	1.25
Girard, Ohio.....	1.25
Haselton, Ohio.....	1.25
Hubbard, Ohio.....	1.25
Leavittsburg, Ohio.....	1.50
Leetonia, Ohio.....	1.25
Lowellville, Ohio.....	1.25
Mercer, Pa.....	1.50
New Castle, Pa.....	1.25
Newburg, Ohio.....	1.65
Niles, Ohio.....	1.25
Pittsburgh.....	.65
Sharon, Pa.....	1.25
Sharpsville, Pa.....	1.25
Shenango, Pa.....	1.50
Struthers, Ohio.....	1.25
Warren, M.D., Ohio.....	1.50
West Middlesex, Pa.....	1.2
Wheatland, Pa.....	1.25
Wheeling, W. Va.....	1.25
Youngstown, Ohio.....	1.25

## MANUFACTURING.

### Iron and Steel.

The Lloyd Booth Company, proprietors of the Falcon Foundry and Machine Works, at Youngstown, Ohio, have recently furnished to the United States Iron and Tin Plate Manufacturing Company, at Demmler, Pa., a complete set of tinning pots 20 x 28 inches in size.

The White River Iron and Steel Company, of Muncie, Ind., have put their 8-inch mill in operation under the management of Thomas Taylor, formerly of Youngstown, Ohio.

At the annual meeting of the Decatur Company, Decatur, Ala., last week the sale of the furnace was confirmed, and the purchasers will probably put it in blast about July 1.

The blast furnace of the Raney & Berger Iron Company, at New Castle, Pa., will be extensively remodeled and three hot-blast stoves added, mention of which was made in our issue of last week. As soon as repairs and additions have been completed the furnace will resume blast, making Bessemer iron to be used in the new Bessemer plant of the Shenango Valley Steel Company, now being erected at New Castle by the Pittsburgh Iron and Steel Engineering Company.

The Pottstown Iron Company of Pottstown, Pa., have recently made an addition to their 112-inch plate mill which in some of its features is a novelty in handling plates from rolls to shears. It consists of an iron building nearly 150 feet long by 80 feet span, covering most of the cooling tables and the large shears. On leaving the rolling table the plates are received on the cooling table, aggregating about 300 feet in length and driven by two small reversing engines. At end of table most distant from the rolls the plates are received by a hydraulic turnover apparatus which turns each plate for inspection. They are then carried by an overhead track to the shears, and will ultimately be conveyed from the shears to point of shipment by a power crane, the whole making, probably, the most complete set of appliances for handling plates from rolls to point of shipment yet devised, and its practical working has resulted in a large reduction of labor previously employed in this work.

At the annual meeting of the stockholders of the Anniston, Ala., Rolling Mills, held last week, Robert Frazer, John McKefroy, J. J. Willett, T. L. Houser and W. W. Stringfellow were elected directors. Robert Frazer was afterward elected president and W. E. Robertson secretary and treasurer.

The stockholders of the Woodstock Iron Company, Anniston, Ala., held their regular annual meeting last week and elected J. W. Noble, Wm. Noble, F. L. Robertson, J. D. Probst, T. G. Bush, A. L. Tyler and W. G. Ledbetter directors, who then elected W. G. Ledbetter president, J. W. Stillwell secretary and S. N. Noble general manager. T. G. Bush, Wm. Noble and A. L. Tyler were appointed a Finance Committee, and H. M. Caldwell, H. C. Thompson, E. F. Howell, W. G. Ledbetter, T. H. Aldrich and T. G. Bush a Committee on Reorganization.

The contract has been let and work commenced on the first coke iron furnace in Texas. The Llano Steel Furnace and Mfg. Company, with a capital stock of \$600,000, are the projectors of the enterprise. This company are composed of Eldwell Eastman and R. D. Smith of Birmingham, Ala., J. H. Moore of Nashville, Tenn., and others. Mr. Eastman, president of the company, is one of the pioneer iron men of Alabama. He was one of the organizers of the Trussville Furnace Company the Attalla Iron and Steel Company and other iron enterprises in Alabama and Georgia. Messrs. Smith and Moore are also largely interested in Alabama and Tennessee furnaces. The new furnace will be located at Llano and work on it will be pushed as rapidly as possible. It will have a daily capacity of 50 tons.

The Cambria Iron Company, at Johnstown, Pa., have put in operation their new billet mill, which is located south of their present 40-inch bloom train in the same building. The billet mill is one of the finest mills in this country for the rolling of billets, and great credit is due Joseph Morgau, Jr., chief engineer of the company, for the success he has made of it and for the smoothness with which it started up. The train is run by a Porter & Allen tandem compound engine of 3000 horse-power, with a 36 inch by 66 inch high and 75 inch by 66 inch low pressure cylinder. It has also an independent condenser run by double horizontal engines located 8 feet below the level of the foundation of the engine. The fly wheel is made in two sections of 90,000 pounds each. Each section had to be loaded on a special car made for the purpose to be transported to Johnstown. A large Worthington pressure pump is also located in the engine room, and an air compressor with a double engine. The

train is a three-high 36-inch train, with raising and lowering hydraulic tables for handling the blooms, worked with a pressure of 400 pounds to the square inch. The blooms are taken from the hot shears at the 40-inch bloom train and conveyed to the new mill by a series of rollers run by small double horizontal Crane engines. After the billets are rolled to the size wanted they are conveyed on another series of rollers run by the same kind of engines to the hot shears, cut off to the required length and are then taken to the cooling bed ready for the market. The shears are of the vertical type, worked by hydraulic pressure of 1500 pounds to the square inch and connected with an intensifier. The company are erecting two large Siemens heating furnaces to heat cold blooms as an auxiliary to the hot shears, to supply the train with hot blooms at all times. The charging and drawing machine at the furnace is one of Cambria's improved machines, worked with air from the air compressor in the engine room. The blooms will be transferred from the furnace to the rolls with an endless wire rope. The engine complete and the hot shear, with intensifier, were made by the Southwark Foundry and Machine Company of Philadelphia. There is also a 15-ton hand crane located close to the rolls, which will take in all the train and engine, and is used in changing rolls and doing other heavy lifting. It was made by William Sellers & Co. of Philadelphia.

A good record was made during May at the Edgar Thomson Steel Works, 32,000 tons of rails having been turned out. While this does not top the record for production, by any means, still it can be considered as a very good month in view of the fact that there were only 25 working days in it. Furnace C of the Edgar Thomson steel plant scaffolded slightly last week, but not sufficient to necessitate the blowing out of the furnace. All of the Edgar Thomson stacks, nine in number, at Bessemer, Pa., are in blast, with the exception of one stack, which will go in early this month.

William Clark's Son & Co., proprietors of the Solar Iron Works, at Pittsburgh, are adding to their equipment a 10-inch mill for tire and hoop material. The mill will be operated by a 28 x 35 inch piston-valve engine of the Mackintosh, Hemphill & Co., Limited, style, which will be run at a high rate of speed.

Negotiations are on foot looking to the establishment at New Castle, Pa., of a large plant for the manufacture of all kinds of springs and continuous mills. Eastern parties are interested in the new venture, among whom are C. H. Morgan, Sr. and Jr., and V. E. Edwards. It is said that the citizens of New Castle will donate the site of land and also offer a cash bonus in order to secure the new plant.

Morris, Tasker & Co. (Delaware Iron Company) have just completed the erection of a new pipe welding mill at their works in New-castle, Del., which takes the place of one destroyed by fire last fall. The new structure is 300 feet long by 175 feet wide, and contains one of the most complete pipe welding plants in the United States, considerable additions and improvements having been introduced. The mill is a substantial iron fire-proof building.

The first of 12 boilers of the Burden Iron Company, Troy, N. Y., made by Sutherland & Co., has arrived at the plant. The boilers are to be placed in the puddling department.

The Maryland Steel Company, at Sparrow's Point, Md., have just added to the plant of their marine department the largest shearlegs in the country. They are 125 feet high and capable of raising 125 tons, being worked by hydraulic cylinders. Work at the shipyard is going forward actively. A steel paddle-wheel steamer, 225 feet long, which is building for the Weems Line and destined for passenger service, is now receiving her engines and joiners' work, and will be ready for service in six or seven weeks. She is expected to attain a speed of 18 miles an hour. Another passenger steamer, for the Baltimore Steam Packet Company, running to Norfolk, Va., is being plated, and her engines are well forward. She is a single-screw vessel, 300 feet in length, and is expected to be completed by November 1. Two steel tugboats for parties at Baltimore are on the stocks. Two other boats of the same class, which have lately been delivered, are now in regular use, and have most satisfactorily carried out the expectations formed of them. At present 2400 hands are employed in the company's various works at Sparrow's Point, although some of them are not just now running to full capacity, only one of the four furnaces being in blast. A large addition has recently been made to the pattern shop and store and a fine drawing room added. The joiners' shop at the shipyard is also receiving a considerable addition to its space. Constant improvements are being effected throughout the great establishment, and it is intended be-

fore long to build a number of open-hearth furnaces and plate and beam mills, &c.

The new Dora Furnace, at Pulaski, Va., commenced operations last week, starting off without a hitch. This is generally conceded to be one of the finest furnace plants in the South.

It is stated that Anderson Gratz of Brooklyn, N. Y., will erect a cotton-tie mill at Birmingham, Ala.

The furnaces and rolling mills in the Chattanooga district are generally in active operation. The Harriman, Tenn., Rolling Mill is in full blast. The Knoxville Iron Company have resumed operations, after having been inactive for some time. Both the furnaces at South Pittsburg, Tenn., are running full capacity. One of the Rockwood furnaces has blown out for repairs, but will soon resume operations. The furnace at Rising Fawn will also blow in soon. One of the furnaces at Dayton is running full capacity; also the Citico Furnace and the Chattanooga Furnace, at Chattanooga, Tenn., and it is stated that, notwithstanding, very little iron is being stacked in the district.

At the meeting of the Pulaski Iron Company, Pulaski, Va., held recently, the officers and directors were re-elected, A. J. Dull being president and John W. Eckman general manager. The annual report showed that the output was 40 000 tons, of which 32,000 tons was foundry iron. Quarterly dividends of 2½ per cent. have been paid and the company now have a surplus fund of \$106 000. The company have leased 1500 acres of coal land and are preparing to make their own coke.

#### Machinery.

W. B. Pollock & Co., proprietors of the Machoning Boiler Works, at Youngstown, Ohio, have commenced the erection of an addition to their plant, 80 feet in size, in which they will place the large set of plate-bending rolls recently purchased by them. These rolls are among the largest in the country, being 20½ feet between housings, and capable of bending plates 20 feet wide and 1½ inches thick. This firm make a specialty of heavy plate work for steel works, blast furnaces and rolling mills, and with the addition of this new tool will be better prepared than ever for turning out this class of work.

The Boise Foundry and Machine Company have been organized at East Liverpool, Ohio, with a capital stock of \$50,000.

The Cleveland Stamping and Tool Company have recently organized in Cleveland, Ohio, Charles H. Coit, F. W. Judd, L. J. Judd, H. C. Kirby and M. B. Clark being the incorporators. The first three gentlemen have been connected for several years with the Avery Stamping Company of Cleveland, Ohio, Mr. Coit as head of their office, F. W. Judd as general superintendent and L. J. Judd as foreman of their works. Mr. Kirby is secretary and treasurer of the Goff-Kirby Coal Company and Mr. Clark is the owner and operator of the Union Elevator. The capital stock is \$25,000 and has all been paid in. The buildings now in course of construction on the Cleveland and Pittsburgh Railway and Hamilton street, near Coe street, are 175 x 75 feet, with boiler house in the rear, and will be fitted with heavy traveling cranes and all modern conveniences for handling goods and machinery. They are now building some very large stamping machinery and expect to be in shape to stamp out anything from sheet metal from an article the size of a thimble to one as large as a bathtub, and they will have ready for the fall trade a full line of the finest solid steel hollow ware made. Mr. Judd, the manager, designed the tools and machinery and made the steel bottle so often illustrated in *The Iron Age*. He also fitted up the plant of the Avery Stamping Company for making the Never-Break hollow ware. The company intend to be in shape to do any kind of special pressed, dropped or drawn sheet metal work in small or large quantities on or about September 1.

The Schultz Belting Company, St. Louis, Mo., are in receipt of a testimonial letter dated May 9 from the Massachusetts Cotton Mills of Lowell, Mass., which is one of the oldest and most substantial concerns in the country, having been incorporated in 1839, and having a capital of \$1,800,000. We reproduce the letter in full: "In answer to your inquiry as to the working of your belting, I will say that we have in use of your double belting 21 or more widths from 1½ inches up to 40 inches inclusive, and to show that we have a fair number of the wider widths will say that the widths, commencing at 10 inches, are as follows: 10, 11, 12, 16, 17, 18, 20, 21, 30, 32, 36 and 40 inches. The 30 inch belt is 160 feet long and the 36-inch belt is 209 feet long. The 32-inch has run for a year, where we started up with the best 30-

inch oak double which we could procure, and which tore entirely in two twice before substituting your 32-inch. A number of the others were put on in place of oak belts, which could not do the work successfully."

The Reeves Pulley Company of Columbus, Ind., are enjoying the largest trade on their wood split pulley which they have ever had. Although running their factory to its utmost capacity they are six to eight carloads behind orders, with a low and daily diminishing stock. They have almost completed an extensive factory at Toronto Junction, Ont., for supplying their pulleys to the Canadian trade, and hope to get this branch in operation in a few weeks.

William T. Bate & Son, Montgomery Boiler and Machine Works, Conshohocken, Pa., are putting up an entire water-gas plant for the Camden Gaslight Company, at Camden, N. J. They have recently built similar apparatus for the coal-gas works at West Chester, Pa., and at Wilmington, Del., as well as for the iron works of Carnegie, Phipps & Co., at Pittsburgh. We learn that Messrs. Bate & Son find a very good demand for the Bate patent duplex and portable boilers, of which they are the sole manufacturers. A number of them have lately been supplied to order in various parts of the country, and the makers have received most appreciative testimonials to their efficiency. A large Bate duplex boiler of this description, with fixtures, is now being placed by them in the works of the Warren-Ehret Company, at Leesport, Pa. They have an old-established and well-equipped foundry and machine shop in their Conshohocken establishment, where they have facilities for turning out a large amount of work.

Harry L. Van Zile and Frank Cryser of Albany, N. Y., have designed an electric motor car for use on steep grades. The electric motor drives two horizontal wheels, which grip a central rail. The motor wheels are mounted on arms at such an angle that the greater the tractive force exerted the greater is the pressure of the grip wheels on the rail. In a recent trial, a motor car weighing about 4½ tons was propelled up a 30 per cent. grade.

The Westinghouse Air Brake Company of Pittsburgh, with works at Wilmerding, Pa., have let a contract for the erection of 50 additional houses at Wilmerding for the use of their employees.

Boys, Porter & Co. of Connellsville, Pa., are building a special boiler feed pump of 2500 horse-power capacity to be used in the main power house at the World's Columbian Exposition at Chicago.

It is interesting to note that the Akron Foundry Company of Akron, Ohio, have recently installed a 5-ton hand traveling crane, built by the Yale & Towne Mfg. Company, for use in their iron foundry. Objection has been made that traveling cranes are not available for foundry use unless operated by power. This statement, however, must be qualified by the circumstances of the case. Where the work does not necessitate frequent or long bridge travel the traveling crane not only possesses all the facilities of a jib crane for such work, but the added convenience of being capable of transfer from one point of the shop or foundry to another wherever it can best be utilized. The crane above referred to is of the pendant type, with the mechanism located on a projecting arm or pendant under the bridge, whereby the efficiency of the men is utilized on cranks at a convenient distance from the ground.

In a striking advertisement on another page G. Edward Osborn & Co., New Haven, Conn., call attention to the Elm City Counter, which is designed for use on automatic machines of all descriptions. Special counters for special requirements on particular machines are made to order. We are advised that this device is meeting with a large sale.

Ainslie, Cochran & Co., founders and machinists, of Louisville, Ky., made a general assignment on the 27th ult. to the Fidelity Safety Vault and Trust Company. Creditors will probably be paid in full as soon as the real estate and fixtures are sold. A reorganization will likely be effected and the manufacture of certain specialties be carried on, but the old heavy bonded indebtedness cannot be carried any longer.

J. Wood, Jr., Schuylkill Foundry and Machine Works, Conshohocken, Pa., informs us that there has been a greatly increased demand of late for his specialty, the Wood Water-Tube Boiler, which is now meeting with much favor in the West. Mr. Wood is contemplating considerable extensions in his foundry plant, to be made in the near future.

The Bignall & Keeler Mfg. Company, St. Louis, Mo., report an active demand for the better grades of iron-working tools manufactured by them. The demand referred to is not confined to any one locality, but is pretty well



distributed throughout the entire country. They have recently entered orders for Peerless pipe cutting and threading machines, costing from \$1500 to \$2000 each, from New Orleans, Memphis, Peoria, Boston, New York and St. Louis. For machines of the same type, but of smaller capacity and less cost, their trade has been very heavy indeed. This company are not disposed to take a despondent view of the business outlook, but on the contrary are enlarging their facilities in preparation for a largely increased trade.

The Lone Star Engine and Boiler Works, with a capital of \$50,000, have been incorporated by T. E. Byrd and associates at Greenville, Texas.

The Midway Machine Works of Oxanna, Ala., and other property of E. M. Lewis, who made an assignment several months ago, was sold recently and bid in by Mrs. Lewis. The machine works will be put in operation at an early day.

Fire on the 29th ult., in San Francisco, destroyed the Fulton Iron Works, Hammond Car Works, Van Drake's Brass Foundry and a number of small frame buildings, causing a loss of \$450,000; insurance, \$95,000. Most of the damage is to expensive machinery. The Fulton Iron Works, owned by Spiers & Hayes, lose \$250,000; Hammond Car Works, owned by John Hammond, \$80,000, and the remainder is divided between Van Drake's foundry and a large number of smaller concerns.

The Lewis Foundry and Machine Company, Limited, of Pittsburgh, have closed a contract with the Cumberland Tin Plate Company of Cumberland, Md., for a large lot of tin-plate machinery.

The Hoover & Gamble Company, Miamisburg, Ohio, advise us that they have orders for three systems of machinery for the manufacture of binder twine which will keep them busy until the first of 1893.

#### Hardware.

Waltham Screw Company, Waltham, Mass., manufacture screws from the smallest watch screws to machine screws about  $\frac{3}{4}$  inch diameter by  $\frac{3}{4}$  long, which the company state are finished the same as watch screws and guaranteed exact size. The company have just moved into a larger factory, and with increased machinery and help will soon be in full operation.

The Chattanooga, Tenn., Powder Company, whose plant is at Ooltewah, have commenced an addition to their works which will double their capacity. They will put in additional machinery for the manufacture of the finest grades of powder. They are at present crowded with orders.

P. J. Conroy & Co. of Paschall, Philadelphia, report that orders for their patent Conroy Refrigerator Door Fasteners have increased this season more than 100 per cent. over those received last year, particularly from the Western and Southern States. This style of fastener has the double recommendation of forcing the door of the refrigerator open as well as tightly closing it.

The Ellis Filter Company, Marlboro, Mass., have become the Ellis Electric Company, and the business has been removed to Brockton, where the company will manufacture other goods in connection with their present line. F. W. Ellis is the general manager of the company.

Richmond Safety Gate Company, Richmond, Ind., manufacturers of Zeller's Automatic Safety Gate for elevator openings, are erecting new quarters into which they expect to move about August 1.

The cutlers in the employ of the Waterville Cutlery Company, Waterville, Conn., went out on a strike for an advance in wages on May 10, but the works were not shut down in consequence, contrary to general report. The company advise us that the matter has been amicably settled and that all the hands are at work again.

Samson Cordage Works, Boston, Mass., have been increasing their plant for the manufacture of Samson braided cord, and have recently purchased a water power near their mill, which they transmit by electricity, as the power which they now have is insufficient without the use of steam.

W. F. Holliday & Co. of Baltimore have transferred their horseshoe manufacturing business to the Cresson Horseshoe and Iron Company, and the machinery from their works on North street has been torn out and shipped to the new establishment of that company at Max Meadows, Va. The Holliday works have been removed to the Brusster Shipbuilding Company's premises, with which enterprise they are to be consolidated for the purpose of manufacturing the ships' hardware for the vessels which will be constructed at their yard. W. F. Holliday is the secretary and treasurer

of the shipbuilding concern, and we are informed that the new hardware works will commence operations under his management about the middle of June.

Mischke & Beckers, 162 West Twenty-seventh street, New York, have added materially to their plant for the manufacture of plain and special hardware and tools, and are prepared to continue and push the sale of their patent screw cutting chuck, patented December 17, 1889, which they claim is adjustable to any lathe or monitor machine, doing away with all reverse motion, and cutting a thread exact to any desired length, or will cut an endless thread. It is referred to as suitable for threading screws, bolts, lag screws, gas and water pipes and special goods of any description. They make a feature of working out and developing ideas in special lines for customers who have not the necessary facilities themselves.

The Aldrich & Ray Mfg. Company of Buffalo, N. Y., are largely increasing their facilities for the manufacture of copper and brass stamped and pressed ware. They are not only erecting an extension to their factory, which will double its size, but they are also putting in a great deal of new presses and other machinery. A factory for pressed and stamped tinware is also to be erected. The company say that they have had trouble for some years to get sufficient copper stock to keep up with their orders, and next year they propose to put \$200,000 into a rolling mill. They believe that Buffalo possesses great advantages in its location for the establishment of a copper rolling mill, and intend to put one up which will embody all the latest improvements. This concern was established some 26 years since in very narrow quarters, and has now grown to be a very important business enterprise.

The Maryland Brass Company, 1525-1529 Guilford avenue, Baltimore, have, in order to meet their increase of business, recently purchased a piece of ground adjoining their works, which will be utilized in making considerable additions to their working plant, increasing the capacity of the brass foundry and enlarging the machine shop very materially. We learn that business has been very brisk with the company, orders being now 50 per cent. over those of last year. They are at present devoting themselves exclusively to the production of the Coale muffler and safety valve, of which, by a recent decision of the United States Court of Baltimore, they have the sole right of manufacture. These patent safety valves have earned very general approval, on account of their efficiency and noiselessness, and the demand for them is increasing so rapidly as to leave the company at present considerably behindhand in their ability to fill orders received. With the contemplated additions to the plant, they hope to be able to promptly meet all requirements in the future. The president of the company, which has been in existence for two years, is Charles J. Carey; F. W. Coale secretary and I. M. Coale treasurer and general manager.

A vise for firmly holding bars or iron pipe, without danger of injuring the pipe, has been placed on the market by Clarence M. Kemp of Baltimore, Md. The body is of cast iron, the screw of steel and the four gripping jaws are of the best tool steel, and are reversible, thereby allowing the edges of each jaw to be used, and when they become dull by constant use they can be easily sharpened. The vise is made in three sizes, to hold pipe from  $\frac{1}{2}$  to 2 inches.

#### Miscellaneous.

The attention of wheel and axle manufacturers is called to the advertisement in another part of this issue of Peter McMenamin, 273 Fifth street, Jersey City, N. J., who offers for sale two patents, one covering an improvement in axle arms to lessen friction and the other being a new design for a metal hub, which does away with the ordinary form of projecting hubs.

The new power house for the Newport News Shipbuilding and Dry Dock Company of Newport News, Va., will be designed and built by the Berlin Iron Bridge Company of East Berlin, Conn. In order to have the building absolutely fire-proof no wood work will be used about the construction, as the side walls will be of brick, the floors of iron and concrete, and the roof will be made with an iron frame covered with the Berlin Iron Bridge Company's patent anti-condensation corrugated iron covering. The steam, compressed air, hot air and electric light plant for the entire shipyard is concentrated in this one building, and it is therefore absolutely necessary that it be fire-proof in every particular.

Receiver Wm. Lane of the United States Rolling Stock Company has written to interested parties at Anniston, Ala., that the works at that place would be started up in the next 30 days.

The Ellwood Patent Enamel Company of Ellwood, Lawrence County, Pa., have been granted a charter, with a capital of \$10,000.

The Glenmore Iron Foundry are about to extend their plant at Paschall Station, Philadelphia, in order to meet their growing business. They will be in position to furnish the trade, in the course of 60 days, with a high type of boiler front and fittings, in addition to the vertical boiler bases and heaters and their Glenmore Shaking Grates at present produced.

The Burgess Soldering Furnace Company, Columbus, Ohio, state that they have in preparation a new form of their gasoline furnace, especially adapted for printers, plumbers, tinners and dentists, which will shortly be ready for the market.

It is said that the business of the Elmira, N. Y., Bridge Works has increased to such proportions that the company will soon commence the erection of another main building. It is also rumored that the company have purchased more land, the present territory not being sufficient.

The Auburn (N. Y.) Mfg. Company's extensive plant will be sold at auction Wednesday afternoon, June 15, at 2 o'clock. Capitalists have recently visited the works with a view of purchasing, and the stockholders have concluded to sell the manufactory to the highest bidder on the date mentioned above.

Ludlow-Saylor Wire Company, St. Louis, Mo., have just secured the contract for the inside ornamental work for the Commercial Bank, who will occupy the quarters recently vacated by the *Globe Democrat* in St. Louis. The work will consist of counter and floor railings, tellers' cages, &c., all of which will be finished in oxidized silver. The Ludlow-Saylor Wire Company are kept very busy and are continually adding to their trade. They make a specialty of original designs, and some of the work they have recently executed has been the subject of much favorable comment.

C. Aultman & Co., Canton, Ohio, state that they have added to their line of goods a 6-horse and 16-horse Star Traction Engine. Heretofore, they have made only 10 and 12 horse sizes. They have also added a 16-horse Phoenix (straw burner) Traction Engine. The manufacture of the Shelby Hemp and Fiber Brake has also been commenced.

The bill filed by the creditors of the Knoxville Car Wheel Company, Knoxville, Tenn., praying for the appointment of a receiver, has been granted, and L. H. Spillman was appointed receiver.

The officials of the Cotton Belt Railroad are contemplating the erection of extensive car shops at Pine Bluff, Ark. They state they will furnish work for 300 men if the city will aid them by donating \$25,000.

Glover Bros., Mill street and Pennsylvania Railroad, Frankford, Philadelphia, are doing a very brisk business at their new foundry, to which they removed a few months ago from their original quarters on Kensington avenue and Green street. Their foundry is commodious and well equipped, and the whole of the new establishment, built from their own designs, is admirably arranged, ample space being allowed for future expansion. Their special line is in a fine grade of light gray castings, for which they find a ready sale to makers of agricultural and textile machinery, also hardware specialties, and they have been supplying recently a quantity of small work for the Philadelphia city authorities. The brothers, Thomas and John H. Glover, were both employed for many years at the works of Morris, Tasker & Co., where they gained the experience which has tended to the success of their present enterprise.

The McShane Bell Foundry, at Baltimore, Md., owned by the Henry McShane Mfg. Company, is doing some very important work in bell castings, and is now one of the largest concerns of its class in the world. There are in hand at their shops three sets of chimes, one of 15 bells for Baltimore, and two of ten bells each for Pittsburgh and Detroit respectively. To cast the bells for these chimes and get the notes in perfect harmony is no easy task, but we are informed that the art has been so thoroughly mastered by the founders in this establishment that they experience little difficulty in turning them out to perfection.

The Brusster Ship Building Company, Baltimore, Md., was incorporated as a stock company on May 5 for the construction of iron and wooden ships, with a paid-up capital of \$75,000, and a further sum of \$50,000 in bonds subscribed. The company have acquired a considerable property at the foot of Chesapeake street, Baltimore, where they are now erecting suitable buildings, including a large machine shop 220 x 50 feet, which will be equipped with the latest improved machinery. Wharves are also in course of construction on the 500 feet of water frontage which is embraced in the company's estate, and a third railway is being laid, two lines being already in com-

munication with the new works. A considerable outlay has been made in order to render the establishment thoroughly adequate to its purpose, and the company are starting with every prospect of making a distinct success. They have already contracts in hand for the building of two large iron tugboats, 100 feet long, as well as three smaller wooden ones, while further orders are pending. The officers of the company are: W. S. Brusster, president; Henry Brusster, general manager, and W. F. Holliday, secretary and treasurer; and these gentlemen, together with Charles W. Slagle and V. Howard Harman, form the board of direction.

The Richmond Safety Gate Company of Richmond, Ind., have broken ground for a new factory adjoining the P. C. and St. L. R. R., where they will erect a two-story brick structure 40 x 80 feet and engine building 18 x 49 feet. The entire ground space to be occupied by the company will be 60 x 180 feet. It is expected the new buildings will be ready for occupancy by July 1 next. This move will give the company twice their former capacity and has been necessitated by the rapid growth in the demand for their specialty.

Some months since the large foundry of Wm. L. Sharp & Sons, at Steubenville, Ohio, manufacturers of stoves, mantels and grates, was destroyed by fire. A new foundry has been erected and is located on the line of the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad, at Steubenville, the building being of brick and L-shaped, 336 x 72 feet. A Colliar hot-blast cupola is located at the inner turn of the L, at which point the railroad switch runs up, unloading close to the cupola. A two-story polishing, plating and fitting building runs parallel with one wing of the molding room, 150 x 30 feet, also an L-shape, the L facing a three-story ware room, 100 x 50 feet. The enameling building and ovens, all iron and brick, are located in the L made by the last two buildings, 42 x 60 feet. A space of 18 and 10 feet is left between each of the buildings. A two-story stock and flask building, 120 x 24 feet, is located 40 feet from the other L of the molding room on the switch. All are located for the least amount of handling. Natural gas is used for all heating and lighting purposes. Their special line is grates of all kinds for wood and slate mantels, enameled, brass, copper and nickel plated, portable, club house, half low and common grates, fireplace linings and iron fire trimmings of all kinds.

In view of the large number of stone, iron and brick structures which are being erected in New York and surrounding cities, the attention of architects and builders is being directed to discover for the inside and outside coating of these an adequate preservation against the action of the weather, corrosion, dampness on brick walls, &c. Acting on the idea that a stone pigment paint would find a much more natural affinity to brick and stone than a lead pigment will, an English company have patented and brought over to this country a soapstone composition paint, which they claim will preserve brick and adhere to it better than lead. The principal ingredient of the paint, as the name indicates, is soapstone, otherwise called steatite. This is manipulated and held to the fiber of the iron or brick on which it is applied by a hard drying varnish which gives a bright enamel finish after two coats have been applied. The body of the paint being thick, all that is required to cover brick is two coats. It has also been applied with much success to hard-finished plaster walls. The company have already coated the brick work of two large buildings downtown, and have just completed under contract certain painting work on brick and iron work in the Colonial Club, Seventy-third street and Boulevard. The agents are John A. Donald & Co., Welles Building, 18 Broadway, New York.

Chinamen fear that tea culture in that country is declining beyond recovery and will no longer be profitable, on account of the competition of India and Ceylon. A Shanghai letter says that at a meeting of native tea dealers recently held at Foo Choo, the center of the trade, the weight of opinion was that the risk of conducting the large plantations had become too great. The competition of Ceylon and Sumatra was fast driving the China tea from the markets and supplanting it. Of the 180 native firms represented at this meeting only 60 decided to remain in the trade and endeavor to pull through the coming season. The remainder decided that the chance of losing their capital was too great to risk any further attempts after the results of the past few years.

## TRADE REPORT.

Those who are anxiously looking for signs of an improvement in the Pig Iron trade will be gratified by reports this week of an increased demand in the Chicago and Cincinnati markets. Our Chicago advices are particularly encouraging. Buyers who refused three weeks ago to place orders at \$12.50 for No. 2 Southern Soft have reason to regret their decision. The same parties have offered \$12.85 the past week and their orders were refused at that advanced rate. The attitude of Southern sellers in that market has greatly improved the tone of business and larger transactions have resulted. At Pittsburgh and Philadelphia, however, Pig Iron is still weak and doubts are expressed as to whether the bottom of the depression has been reached. Bessemer is openly quoted at \$14.10, Pittsburgh, and at least one block was sold at \$14, delivered.

There is good reason to believe that Pig Iron stocks are now considerably lower throughout the country than they have been.

Steel Billets appear to have touched bottom at Pittsburgh, as attempts made by buyers to place orders at present prices for deliveries running up to the close of the year were unsuccessful.

Sales of Steel Rails are reported in considerable number at Philadelphia, Pittsburgh and Chicago, but in nearly all cases they were for early delivery, Chicago alone reporting some sales for delivery later in the season.

Wire Rods appear to be, next to Rails, the firmest in the list of Steel products. It is almost impossible to get Rods for immediate shipment, owing to breakdowns at some of the mills.

Manufactured Iron and Steel are weak, especially Plates, but an improvement is noted in Bars and Sheets at Chicago.

Old Material is badly demoralized, and high-grade Iron stock can be had at almost unprecedented low prices.

The Iron Ore trade at Cleveland reflects the condition of the general Iron market. Sales are small, and the mining companies are making strenuous efforts to secure lower vessel rates from shipping ports. Some of the rates named now are remarkably low, and the vesselmen will have good reason to complain of the unprofitable condition of their business.

Metals show very little change this week. Copper is quiet. Pig Lead is sluggish. In Spelter there is a stand-off between buyers and sellers, and the bulls are still in control of Pig Tin, with 21.80¢ bid for delivery in the last half of the year.

Our advices from London, by cable, report Pig Iron warrants advancing with the steady diminution of stocks and the continuance of the Durham coal miners' strike. Conflicting reports are in circulation as to the Copper combination.

## Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., May 31, 1892.

The beginning of the sixth month of the year has been reached, and still there is no improvement in the Iron and Steel trades. It may, indeed, be doubted whether the extreme point of depression has been reached, as prices are at the lowest, and as a matter of fact, lower at the beginning of June than during any other period in the history of the trade. It is perfectly clear, therefore, that no reaction can be hoped for during the next 30 days, and it may not be within 60 or 90 days, or even longer than that. This, of course, is a most trying time to all who are engaged in the business, but there is a possibility that things are not quite so bad as might be supposed from surface indications. Prices were never so low, but, on the other hand, processes of manufacture have been so much improved that cost must have been greatly reduced, and besides there is in the aggregate a considerable volume of business, although at a small profit, besides its needing more looking after. On the whole, however, there is room for encouragement as regards the ultimate outcome, and there is a disposition to regard August or September next as the time in which the turning point will be reached, although even that is a matter of conjecture. Crop reports may have some influence (less perhaps than usual on account of last year's surplus), but all the same something is needed to give things a start, and that something—usually the unexpected—may come at any time. From immediate appearances, however, we can only say that there is no more prospect of a change than at any time since the beginning of the year, but on general principles and from past experience it is found that the fall of the year is usually the period in which new movements find their inception, and it is hoped, therefore, that the coming autumn will show conclusively that the swing of the pendulum will be the reverse of what it was during the winter and spring.

**Pig Iron.**—The depression in prices appears to show no abatement whatever. Standard brands are held at unchanged figures, and are pretty well taken up, but the supply of new brands is so large that it is with the utmost difficulty that a general break can be avoided. Consumers are perfectly satisfied with their old favorites at current rates, but when they are constantly besieged with parties who have "something of equal quality, and at very much less money," the pressure is not easily withstood, and more frequently results in an appeal for a reduction in price of the Iron they have a preference for than in an order for something they have no wish to experiment with. The effect on the market is very demoralizing, however, and must in the long run inevitably result in a revision of quotations all through the list. It is not to be understood that competition of the kind just mentioned is any worse than it has been, but it is certainly no better. There is more Iron for sale at the low figures now ruling than at any previous time, so that the immediate prospect for improvement cannot be considered very bright. Consumption has not been up to what was expected, and will undoubtedly show a still further falling off during the next couple of months, so that unless there is a further curtailment in the output the chances for better prices are exceedingly slender. General quotations are about as named below, but everything depends on circumstances, such as quantity, brand, terms of payment, point of delivery, &c. Southern brands, on account of advantage in freights, bring from 15¢ to 50¢ lower than Philadelphia deliveries at



such points as from Wilmington to Baltimore, or from Harrisburg to the same point:

American Scotch, No. 1x.....	\$17.00 @ \$17.50
American Scotch, No. 2x.....	16.00 @ 16.50
Standard Penna. (Lake Ore), No. 1x.....	15.75 @ 16.25
Standard Penna. (Lake Ore), No. 2x.....	14.75 @ 15.25
Standard Penna. (Lake Ore), No. 2 plain.....	13.50 @ 14.00
Medium Quality, No. 1x.....	15.00 @ 15.50
Medium Quality, No. 2x.....	14.00 @ 14.50
Standard Virginia, No. 1x.....	14.75 @ 15.25
Standard Virginia, No. 2x.....	14.00 @ 14.50
Medium Va. and Southern, No. 1x.....	14.50 @ 14.75
Medium Va. and Southern, No. 2x.....	14.00 @ 14.25
Standard Penna. and Virginia Forge.....	13.50 @ 14.00
Ordinary Forge.....	12.75 @ 13.25
Hot-Blast Charcoal.....	19.50 @ 21.00
Cold-Blast Charcoal.....	24.00 @ 26.00

**Bessemer Pig.**—There is some little business doing all the time, and quotations are said to be from \$16 to \$16.50 at furnace, but no large lots are taken at these figures.

**Low-Phosphorus Pig.**—A few sales are being made, but chiefly in small lots, and at somewhat irregular prices. About \$17.50 at furnace is quoted for 0.03 or less, although some name higher figures, while others would be glad to make a moderate concession for a good-sized order. The general feeling is dull and unsettled.

**Steel Billets.**—No business of any amount has been reported within the past few days. Consumers bought pretty liberally some time ago, and as the offerings are still large, and prices show no tendency to rally, there is a disposition to let things take their course and buy only to cover actual requirements. Nominal prices are about \$24.75 at Philadelphia or Schuylkill Valley points, but \$24.50 could be done, and probably a little less on the right kind of an offer, but as we said before, bids are hard to get, unless for something wanted within the next 30 days.

**Steel Rails.**—There is no special change to note in this department, except that business is somewhat more active. Large orders are not coming forward, however, the lots bought being for immediate shipment and to meet urgent requirements. Prices unchanged—say \$30 at mills for heavy sections.

**Muck Bars.**—Demand very light, prices varying according to circumstances. Some makers hold Bars at \$24.50 @ \$25 at their mills, while others are very willing to deliver them at those figures. Sales chiefly of strictly first-class Bars at from \$25 to \$25.25, delivered.

**Bars.**—There is nothing doing beyond the regular routine demand. The best makes, which are used for specialties, are in fairly good demand at 1.70¢ @ 1.75¢, delivered, but for the ordinary run of business 1.65¢ @ 1.70¢ is all that can be obtained, and in some cases still lower figures are quoted. In a general way it may be said that business is dull and depressed, and prices weak at the lowest figures ever known. At the same time, some leading mills claim to be running full at the figures first mentioned, while others find business hard to get at any reasonable price. Steel Bars are in some little demand, at same price to a 1/8 more than Best Refined Iron.

**Plates.**—There is little or no change to note in this department. The demand for carload up to 100-ton lots is pretty fair, but large consumers, such as ship and bridge builders, are doing very little; hence the mills are hungry for work, and until some business of this character comes on the market it is useless to talk about better prices. Some sellers claim to be doing a little better than our quotations; but it is believed that for every ton at a better price there are 20 tons that are sold at lower figures, but everything depends

on the size and general character of the order. General quotations about as follows:

	Iron	Steel
Tank Plates.....	1.80 @ 1.90¢	1.75 @ 1.85¢
Shell.....	2.10 @ 2.20¢	2.10 @ 2.20¢
Flange.....	2.70 @ 2.90¢	2.30 @ 2.40¢
Fire Box.....	3.00 @ 4.00¢	2.60 @ 2.80¢
Special qualities.....		3.25 @ 3.75¢

**Structural Material.**—There is only a moderate amount of new business coming in, and that chiefly for architectural purposes, for which there is a fairly good demand. Bridge and elevated railway work is not coming in very rapidly, although some of the mills appear to be busy on old contracts; but, taking them all around, work is not very abundant. Prices are weak and irregular, and although nominally quoted as follows, concessions are not hard to obtain when the order is of any size: From 1.80¢ to 1.90¢, delivered, for Bridge Plates; 1.80¢ @ 1.90¢ for Angles, and 2.10¢ @ 2.30¢ for Beams, Channels or Tees, price depending on size of order.

**Sheets.**—Demand not active, although in some quarters business is said to be coming in a little better, and for good sized lots special quotations are made, although for small orders and best makes prices are nominally as follows:

Best Refined, Nos. 14 to 20.....	2.40¢ @ 2.60¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....	3.10¢ @ 3.15¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢

Common, 1/2¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about 1/4¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3 1/2¢
Best Soft Steel, Nos. 21 to 24.....	3 1/2¢ @ 3 3/4¢
Best Soft Steel, Nos. 25 to 26.....	3 3/4¢ @ 3 1/2¢
Best Soft Steel, Nos. 27 to 28.....	3 3/4¢ @ 4¢
Best Bloom Sheets, 1/2¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 70 %
Common, discount.....	@ 72 1/2 %

**Old Material.**—Demand fair, especially for Steel Scrap, for which prices are well maintained. Iron Scrap is comparatively dull, and unless for material that happens to be wanted, prices might have to be shaded considerably to secure a buyer. Asking prices about as follows: \$16 @ \$16.50, delivered, for Heavy Steel Scrap, and \$19 @ \$19.50 for low phosphorus. General quotations about as follows: Iron Rails, \$19.50, spot, to \$20.50, delivered; Steel Rails, \$16 @ \$16.50, delivered; No. 1 Railroad Scrap, \$17.50 @ \$18, Philadelphia, or for deliveries at mills in the interior \$18 @ \$19, according to distance and quality; \$12.50 @ \$13 for No. 2 Light; \$13 @ \$14 for best Machinery Scrap; \$13 @ \$14 for Wrought Turnings; \$9 @ \$10 for Cast Borings, and nominally \$22 @ \$24 for Old Fish Plates, and \$15 @ \$16 for Old Car Wheels.

**Wrought-Iron Pipe.**—Prices are so irregular that it is hardly worth while trying to quote them, unless by allowing a margin of from 5 % to 10 % or more from nominal discounts, which are as follows:

Butt-Welded Black.....	57 1/2 %
Butt-Welded Galvanized.....	47 1/2 %
Lap-Welded Black.....	67 1/2 %
Lap-Welded Galvanized.....	55 %
Boiler Tubes, 2 1/2 inch and under.....	52 1/2 %
Boiler Tubes, 3 to 6 inch.....	60 %
Boiler Tubes, 7 inch and larger.....	55 %

## Louisville.

LOUISVILLE, KY., May 30, 1892.

There is but little doing, the market being dull, and consumers who were in need of Iron have satisfied their wants. The price of Iron has not declined further, and it is offered at figures which have ruled during the last month. Nor is the position of the furnaces less strong, but rather their financial condition is such that leading furnaces are in position to hold their

Iron unless consumers are willing to pay the present market prices.

For some time there has been a determined effort to secure lower prices, but outside of a very small tonnage these efforts have not been successful. Furnacemen know that consumers in general have not large stocks of Iron, and that it will be necessary for them to be on the market constantly for at least small lots if they do not desire to buy for future delivery. As consumption is about on the basis of production, it is felt that whatever change occurs will be for the better. We quote for cash, cars, Louisville:

Southern Coke, No. 1 Foundry....	\$13.75 @ \$14.25
Southern Coke, No. 2 Foundry....	12.75 @ 13.25
Southern Coke, No. 3 Foundry....	12.00 @ 12.50
Southern Coke, Gray Forge.....	11.50 @ 12.00
Southern Charcoal, No. 1 Foundry.	15.75 @ 16.75
Southern Car Wheel, standard brands.....	18.00 @ 19.00

## Pittsburgh.

Office of The Iron Age, Hamilton Building, Pittsburgh, May 31, 1892.

There is no improvement in the Iron and Steel trades since our report of last week. Prices still show a tendency to decline, as reports of sales are going at prices lower than any we have yet recorded. Buyers continue to place orders for immediate requirements only, and do not hesitate that they are running no risk whatever in so doing, as there are no indications of any enhancement of values for some time yet. The situation is remarkable in many ways, but chiefly in the fact that in the face of the lowest prices ever known for many lines of material, both raw and finished, it is almost impossible to effect sales. Brokers say that they have done more business in other years in one month than they have in the entire five months of this year which expire to-day. Some few authorities state that after the Amalgamated scale has been arranged for another year, and manufacturers know just what their labor is going to cost them, there will be a more settled feeling and possibly a slight improvement in the situation. The general impression is, however, that those who can show a "clean slate" at the end of 1892 will be very fortunate, and the fear is expressed that the balance will be on the wrong side of the ledger with those concerns that do not possess the most modern facilities for cheap production.

**Pig Iron.**—The event of the week was the reduction in carrying rates on Connells-ville coke, which will go into effect on June 1. The rate from the Connells-ville region to Pittsburgh was reduced from 70¢ to 65¢ per ton and to the Mahoning and Shenango valleys and the Wheeling district from \$1.35 per ton to \$1.25 per ton. While the reduction was not as great as was asked or expected, it will, no doubt, be much appreciated by the furnace operators. We are advised that the Andrews & Hitchcock Iron Company, operating the Hubbard furnaces at Hubbard, Ohio, will add three stoves to one of their stacks and otherwise repair it. For the past week there was very little Iron changing hands. A seller with 2000 tons of Bessemer Iron which he offered at \$14.25, delivered, scoured the market thoroughly and was unable to find a buyer for it. There is little or no Iron from the valleys coming into Pittsburgh now, as our city furnaces have the advantage of location, which gives them lower freight rates, and they are fully able to take care of all the business offering. The demand for Gray Forge Iron is very small and the same is true of Foundry. There were a few small sales of Bessemer last week, but at prices lower than have yet been touched, \$14.10, delivered, having been accepted for two lots, the deliveries being June and July. We quote the market as follows:

Neutral Gray Forge.....	\$12.65 @ \$12.85, cash
White and Mottled.....	12.25 @ 12.50, "
All-Ore Mill.....	12.75 @ 13.00, "
No. 1 Foundry.....	14.40 @ 14.65, "
No. 2 Foundry.....	13.50 @ 13.75, "
Bessemer Iron.....	14.10 @ 14.25, "
Warm-Blast Charcoal.....	18.50 @ 20.00, "
Cold-Blast Charcoal.....	25.00 @ 27.00, "

While we do not quote Bessemer lower than \$14.10, it is stated that one block of Iron was sold last week at \$14, delivered. In the depressed condition of the market, a good-sized order with close deliveries could probably be placed at that figure.

**Ferromanganese.**—Domestic continues to rule at \$61.50 @ \$62 while foreign is held at \$59.25 at seaboard.

**Soft-Steel Billets.**—The impression is growing that Billets have pretty nearly reached bottom, as attempts made by buyers last week to place orders for Billets at present prices, for deliveries running well up to the close of the year, were unsuccessful. Our four mills here are well fixed with business running up to July 1, but they do not care to book orders for delivery, after that date until they find out what they will have to pay for labor for the year commencing on that date. The sliding scale at the Homestead Steel Works will expire on June 30, and as \$25 for 4 x 4 inch billets is the minimum price on which wages can be based, it is pretty evident that this minimum price will be considerably reduced when a new scale is formulated. We quote the market at \$22.25 @ \$22.50 for deliveries up to July 1. We note a sale of 1000 tons at \$22.40 for May and June delivery, and another sale of 1000 tons at \$22.28, for June delivery.

**Steel Rails.**—A considerable number of orders was booked during May by our local mill and in nearly all cases deliveries were requested at the earliest possible moment. This is taken by makers as evidence that railroads are putting off placing orders just as long as they can in the expectation that the Rail Association will lower the price. The Edgar Thomson mill made 32,000 tons of Rails in May. Prices remain at \$30, f.o.b. at mill.

**Structural Material.**—Business continues to be disappointing as makers expected to be pretty well fixed with orders when June arrived, which is not the case. Of course a fair tonnage is going, but it does not come anywhere near meeting capacity for production. With the capacity of the 13 or 14 mills in this country that make Structural Shapes so largely in excess of the consumption, it is certain that the bulk of the business will be handled by three or four concerns that are well known to have the best facilities for turning out Shapes at the lowest possible cost. We quote as follows: Beams and Channels, on a basis of 1.90¢ @ 1.95¢ for desirable orders and 2¢ @ 2.10¢ for small lots; Angles, 1.85¢ @ 1.90¢; Universal Mill Plates, Iron, 1.80¢ @ 1.90¢; Universal Mill Plates, Steel, 1.80¢ @ 1.90¢; Tees, 2.40¢; Refined Iron Bars, 1.70¢; Steel Bars, 1.75¢.

**Wire Rods.**—It is almost impossible to get Rods for immediate shipment, and this has had the effect of making prices firmer for forward delivery. Several makers state that they will not book any business at less than \$32.50. We quote the market at \$32 @ \$32.50 for deliveries after July.

**Steel Plates.**—The situation is much the same as was noted last week; a fairly large tonnage moving, but buyers continue to have the benefit of very low prices. We quote prices as follows: Flange, 2.05¢ @ 2.15¢; Fire Box, 3.50¢ @ 3.75¢; Shell, 2¢ @ 2.10¢; Tank, 1.75¢ @ 1.85¢, f.o.b. Pittsburgh. Some of these prices were shaded recently where some large orders were involved.

**Muck Bar.**—This continues dull and neglected. Soft Steel is fast crowding out

Muck Bar and as it can be obtained about \$2.50 per ton cheaper, it is evident that the demand for Muck Bar will not increase any while present conditions last. We make nominal quotations of \$24.50, delivered at buyers' mill.

**Merchant Steel.**—There was a little better inquiry for Finished Steel last week and makers believe that if we have some nice weather from now on business will pick up considerably. The long period of wet weather and the floods in the West have retarded business considerably, particularly Agricultural Steel, the demand for which has been very unsatisfactory for some time past. We quote as follows: Crucible Spring Steel, 3½¢ @ 4¢; Tool Steel from 6½¢ upward, according to quality, and Bessemer Machinery, Tire and Spring Steel from 2¢ up to 2.40¢, according to quality.

**Barb Wire.**—There is no change to note in the situation since our last report. Makers everywhere report that they have all the business they can attend to, and that they are unable to turn out product as fast as customers want it. Notwithstanding the great activity, prices do not show any change and we quote as follows: \$2.25 @ \$2.35 for Painted, and \$2.70 @ \$2.75 for Galvanized, f.o.b. at factory, the lower prices named being on carload lots.

**Wrought-Iron Pipe.**—The demand continues fair, but prices do not show any inclination to advance. With the orders that are being received now together with those booked some time since mills generally are pretty fully employed. Discounts remain as follows: Butt, Black, 57½¢; Galvanized, 47½¢; Lap, Black, 67½¢; Galvanized, 55¢; Boiler Tubes, up to 2½ inch inclusive, 55¢; 3 inch and larger, 65¢; Casing, 55¢; Inserted Joint Casing, 50¢. Makers continue to shade these discounts considerably.

**Wire and Cut Nails.**—The demand for Wire Nails is not as heavy as it was some time ago, and as a result prices have declined considerably. The low prices at which Billets can be had has also had the effect of lowering prices. We quote at \$1.55 @ \$1.60 in carload lots, and \$1.65 in less quantities. There certainly is very little money for Wire-Nail manufacturers in the above prices. In Cut Nails the demand is only moderate, although we are advised of some very good orders having been placed within the last ten days. We quote as follows: \$1.47½ @ \$1.50 for carload lots, 30¢ averages, f.o.b. in Wheeling and Mahoning Valley district.

**Manufactured Iron.**—There seems to be a misunderstanding existing among Bar Iron makers in regard to the two weeks shut down commencing with the first Monday in July, to which we have already referred. Some of the concerns whose mills are under the jurisdiction of the Amalgamated Association claim that they have not been notified of any shut down, and that if they are compelled to close their mills for two weeks without any notification it will be taking an unfair advantage. Upon investigation we find that at the last convention of the Amalgamated Association, held in Pittsburgh in June of last year, it was unanimously decided to close down every mill making finished material of any description for the first two weeks in July. The different mill committees have been instructed by the Amalgamated Association to notify their employers of this action, and if any firms have not been so notified, it is the fault of these committees. Of course the Amalgamated Association will meet here before July 1, and the resolution to close for two weeks may be rescinded, but from present indications it will be allowed to stand and manufacturers will do well to arrange for

a shut down during the first half of July. Mills generally are pretty fully employed working on both stock and orders. Prices do not show much change and we quote as follows: No. 1 Bars at 1.57½¢ @ 1.60¢, 60 days, 2 % off for cash; Bars made from Old Rails at 1.47½¢ @ 1.50¢; Steel Sheared Plates, 1.80¢ @ 1.90¢; Iron Sheared Plates at 1.75¢ @ 1.85¢; No. 24 Sheet at 2.40¢ @ 2.50¢, 60 days, 2 % off for cash. Skelp Iron, we quote at 1.50¢ @ 1.55¢ for Grooved and 1.60¢ @ 1.65¢ for Sheared, 4 months, or 2 % off for cash.

**Old Rails.**—There have been a few sales of Old Steel Rails since our last report, on which we base quotations as follows: Short lengths Old Steel Rails, under 6 feet, which do not require sorting, at \$15.75; miscellaneous lengths are held at \$15.25 and long lengths \$16.25. Old Iron Rails may be quoted at \$19, delivered in the Mahoning Valley. We are advised of a sale of 500 tons of miscellaneous lengths Steel at \$14.30, delivered at buyers' mill.

**Scrap Iron and Steel.**—The market is completely demoralized and Scrap Material of all kinds can be had at almost any prices buyers care to pay. It is said there are between 5000 and 6000 tons of No. 1 Railroad Wrought Scrap stored in yards in Pittsburgh for which there is no sale whatever. We make nominal quotations as follows: No. 1 Railroad Wrought Scrap, \$14.50 @ \$15 per net ton; Cast Scrap, \$11 @ \$11.50 per gross ton; Billet and Bloom Ends, \$15.50 @ \$15.75; Cast-Iron Borings, \$7.50 @ \$8.00 per gross ton; Mixed Country Steel, \$13 per gross ton; Railroad Coil Springs, \$17 @ \$17.50 per gross ton; Leaf Springs, \$19.50 @ \$20.

The New Castle Steel Casting Company of New Castle, Pa., manufacturers of Steel Castings for all purposes, have arranged with the J. H. McLain Company of 10 So. Water street, Cleveland, Ohio, to act as their agents for that city and vicinity.

## St. Louis.

Office of The Iron Age,  
Bank of Commerce Building,  
St. Louis, May 30, 1892.

**Pig Iron.**—There is practically no change to note in this department since our last report. The floods in this locality, which caused an almost entire suspension of business, have receded, and furnaces are now in a position to fill orders. The demand is light, however, and stocks on furnace banks continue to accumulate. Prices do not change either way. A large number of manufacturers, both here and in East St. Louis, are only now beginning to get into shape to start up again, having been flooded out. Southern furnaces continue to keep running full time, and there seems to be but little chance of any reduction in production. While this continues there is but little hope for any improvement in prices. The outlook is not considered encouraging, and any material improvement in the demand seems out of the question. The market will probably continue in its present weak and unsettled condition for some time, at least throughout the summer months. Consumers are kept fairly busy, but complain of the low prices at which they are compelled to accept business. This is particularly noticeable in the architectural line. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry,	\$14.00 @ \$14.25
Southern Coke, No. 2 Foundry,	13.25 @ 13.75
Southern Coke, No. 3 Foundry,	13.00 @ 13.00
Gray Forge.....	12.25 @ 12.50
Southern Charcoal, No. 1 Foundry.....	16.25 @ 16.75
Southern Charcoal, No. 2 Foundry.....	15.50 @ 16.00



Missouri Charcoal, No. 1	14.50 @ 15.00
Foundry.....	
Missouri Charcoal, No. 2	14.00 @ 14.25
Foundry.....	
Ohio Softeners.....	17.00 @ 17.25

**Bar Iron.**—There is no improvement to note in this department. Mills are making some low prices without attracting much trade and are considerably discouraged thereby. Notwithstanding the almost certain labor troubles in July, consumers are not disposed to anticipate their wants, and are satisfied to purchase their supplies from hand to mouth. Lots from mill are nominally quoted at 1.60¢, half extras, f.o.b. cars East St. Louis. It is pretty generally understood that on any kind of a desirable order this price can be shaded. Lots from store command 1.65¢ @ 1.70¢, according to quantity.

**Barb Wire.**—There is not much doing in this commodity. Manufacturers who a few weeks since were behind their orders, are at the moment looking for business, which, however, is very dull. Prices remain unchanged, although a lower range of values will shortly be in order unless there is a decided improvement in the demand. We quote as follows: Painted, from mill, \$2.30 @ \$2.35; Galvanized, \$2.75 @ \$2.80; less than car lots 10¢ per cwt. additional.

**Wire Nails.**—The market continues in the weak condition noted in our last report. Mills are offering any quantity desired at \$1.80, and it is reported that this price has been shaded in several instances. The market is in a very chaotic condition, and lower prices are almost sure to result. Mills are carrying large stocks, which will necessitate the naming of a very low price to move them.

(By Telegraph.)

**Pig Lead.**—There is absolutely no change to note in this department. Since our last report trade is exceedingly light, with but little prospects of an early revival. Desilverized is quoted at 4.07½¢, while Soft Missouri is offered at 4.05¢ for delivery during June and July.

**Spelter.**—A slight improvement in the demand is noted. Several hundred tons have been taken at about 4.60¢, this price probably being shaded on a desirable order.

Chamberlain, Turney & Co. have removed their office from Bank of Commerce Building to the Laclede Building. The office is temporarily in charge of Mr. Charles Stevenson.

## Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street, CHICAGO, June 1, 1892.

**Pig Iron.**—The element of strength indicated in last week's report by a slight advance in the price of Southern Iron was decidedly more pronounced during the week that has just closed. Buyers that refused three weeks ago to place their orders at \$12.50 for No. 2 Southern Soft have reason to regret their action. The same parties have offered \$12.85 in the last week, and the orders were not accepted. Furnacemen as a rule are refusing to shade \$13.35 on carload lots, and many of them are unwilling to take orders at this price, and it is said the lowest price which would be made on lots ranging from 1000 to 5000 tons would probably be about \$13.10. This position on the part of Southern makers has greatly strengthened the entire market, and has removed much of the disposition on the part of makers of Northern and Southern

Coke Irons to shade prices. In fact, they are adhering more closely to quotations than has been the case for some months. The large buyers of Charcoal Irons are still withholding their orders in the hope that they will yet be able to purchase at \$16. From present appearance the chance of obtaining their Iron at this price is less favorable to-day than it was some time ago. In the meantime they are buying for immediate wants in small lots at prices ranging from 50¢ to \$1 a ton advance on these figures, according to brand, and on quantity makers are accepting the low price for immediate shipment and holding firmer at the higher price for deliveries covering the balance of this year. Under the improved condition of the market the demand has increased for all classes of crude Iron from the carload trade to the 500 ton buyers, and for the week there have been sales made which would probably aggregate in the neighborhood of 15,000 tons, thus making a very satisfactory volume of business. Although dealers have been complaining that business was dull during the last three months, they now state that more tonnage has been booked than during the same period last year. The average of prices, however, has been very much lower, and much of the business was taken at prices which will scarcely afford a profit to makers. We quote as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.50 @ \$17.00
Local Coke Foundry, No. 1.....	14.50 @ 15.00
Local Coke Foundry, No. 2.....	14.00 @ 14.50
Local Coke Foundry, No. 3.....	13.50 @ 14.00
Local Scotch.....	15.00 @ 16.00
Ohio Strong Softeners.....	16.50 @ 17.00
Southern Coke, No. 1.....	15.00 @ 15.50
Southern Coke, No. 2.....	13.85 @ 14.25
Southern Coke, No. 3.....	13.35 @ 13.75
Southern, No. 1, Soft.....	13.75 @ 14.25
Southern, No. 2, Soft.....	13.35 @ 13.50
Southern Gray Forge.....	12.75 @ 13.25
Southern Mottled.....	12.75 @ 13.25
Tennessee Charcoal, No. 1.....	17.50 @ 18.00
Alabama Car Wheel.....	21.00 @ 23.00
Coke Bessemer.....	15.50 @ 16.00
Hocking Valley, No. 1.....	17.00 @ 17.50
Jackson County Silvery.....	17.00 @ 17.50

**Bar Iron.**—The market continues irregular and prices at mill remain as last quoted. It is evident, however, that the lowest sellers are withdrawing their prices and there is more competition for orders than a week ago. There are makers who are willing to take business at 1.45¢, half extras, at mill, but some of those who were doing so two weeks ago have advanced their price. Makers of the better grade of Iron are refusing to meet these prices, and are asking 1.55¢ @ 1.60¢, Chicago. The market has gained some strength during the week, and upon the whole appears to be in better shape. There is a very good demand for Soft-Steel Bars. Makers continue to quote 1.70¢, Chicago, to regular trade. From stock jobbers are quoting 1.75¢ @ 1.80¢ rates on Iron Bars, and 1.85¢ @ 1.90¢ for Steel. The demand from consumers has increased very materially, and jobbers report an excellent trade in small lots.

**Structural Iron.**—No important transactions have occurred in Structural Shapes, yet there has been a good business doing, which consists largely of orders for less than carloads. Beams and Channels are quoted at 2¢ @ 2.05¢, Chicago, according to quantity, some of the makers refusing to meet the lower price. In round lots Angles are quoted at 1.85¢ @ 1.90¢, Universal Plates at 1.90¢, Sheared Plates 1.95¢, Tees 2.40¢. From stock on hand jobbers quote 15¢ advance on these prices.

**Billets and Rods.**—There was some inquiry for Billets last week, on which manufacturers quoted \$24.50. One sale is reported at probably a shade under this figure. Rods in fair request and mills are refusing to accept orders for delivery during June and July. Manufacturers are still quoting \$34.50, but are prepared to meet competition when they want the business.

**Rails and Track Supplies.**—In small lots the aggregate sales of Rails for the week would probably amount to 15,000 tons, a part of which is for delivery later in the season. Makers are quoting \$31 @ \$31.50 for prompt shipment. There is considerable business pending and a fair prospect that Western mills will be fully employed during the entire year. There is no change in the price of Splice Bars, which are quoted 1.70¢ for Iron and 1.75¢ for Steel. Track Bolts, hexagons, are quoted 2.62½¢ and square nuts 2.55¢.

**Merchant Steel.**—There is more inclination on the part of buyers to place orders for small lots, but in a general way the market remains in about the same condition as it has been for weeks. Implement manufacturers are coming a little closer to the buying point and are working hard to duplicate some low prices that have been made, with apparently little prospect of success. In some cases manufacturers refuse to shade prices or accept orders at the figures they made a year ago. On the general run of trade we make the following quotations: Open-Hearth Spring, Tire and Machinery Steels 2¢ @ 2½¢; Crucible Spring Steel, 3½¢ @ 4¢; Machinery, 4½¢ @ 5¢; Tool Steel, ordinary grades at 6½¢ @ 8¢.

**Plates, Tubes, &c.**—The conditions governing this branch of business can scarcely be related. The boiler makers' strike continues and business in all the shops in the city is paralyzed. Orders from the country have increased materially and many of the strikers have gone to the country shops to seek employment at the same wages or less than what they were getting in Chicago. Both parties continue obstinate and the day of settlement appears indefinite, as they are not even willing to confer on the subject. Manufacturers are working hard to secure orders and through this means of competition have reduced the selling price without taking any business of importance. In a general way prices remain unchanged from store, except that the market has probably become weaker through the efforts of manufacturers to sell, and this is reflected in the retail trade.

**Sheets.**—There is an excellent demand for Black Sheets, very much of it being for a period that mills are unwilling to book deliveries. Manufacturers are still asking 2.70¢ @ 2.75¢ for No. 27 at mill for prompt shipment and refusing to book orders for delivery after July 1. The demand for Galvanized Iron has improved, and makers of the best grades deny that they have sold at 70 and 10 % off and decline to meet the price for future delivery. They hold that the best price that they will make is 70 and 5 % off on Juniata in carload lots. The quality of Iron that has been selling at the lower price is questioned by manufacturers who are unwilling to meet these figures, which frequently gives rise to unpleasant comments and criticism on quotations that have been made from absolute offers of manufacturers to supply Iron at prices named and guarantee quality. In making quotations it is the purpose to give the range of the market, and the buyer must decide upon the quality of material which can be had at the various prices, which are also at times governed by quantity and credit. Jobbers are quoting Juniata at 70 % off in small lots from store.

**Old Rails and Wheels.**—The demand for Old Rails is rather light. An offer of \$17.75 was made on 300 tons and refused. Sellers would probably accept \$18, but they are nominally quoted at \$18 @ \$18.50. One sale of Old Wheels is reported at prices equivalent to \$15.60, Chicago. Nominal quotations are \$15 @ \$15.50. Old Steel Rails are uncalled for, but could be supplied in round lots at \$12.50 @ \$13, mixed lengths.

**Scrap.**—Nothing has occurred to alter the condition of this market since our last report. Dealers are straining every effort to dispose of stock on hand or turning a transaction between railroads and consumers. We renew the following quotations, per net ton, f.o.b. Chicago: No. 1 Forge, \$14.50; No. 1 Mill, \$10; Pipes, \$9.25; Wrought Turnings, \$8.50; Mixed Steel, gross ton, \$10.

## Cleveland.

CLEVELAND, OHIO, May 30, 1892.

**Iron Ore.**—There have been a number of small sales during the past week, though none of much magnitude. The trade is in non-Bessemer, the beginning of which was announced exclusively in *The Iron Age* several weeks ago. The tendency is more and more toward last season's prices and buyers have been able, in some instances, to shade these a trifle. Non-Bessemer Hematites are selling at \$3.50 @ \$3.75 and Non-Bessemer Specular and Magnetic Ores at \$4.25 @ \$4.50. Negotiations are pending for the sale of several large blocks of Menominee and Gogebic Bessemer, but are not likely to be closed for a few days. Mine owners are still working diligently for lower rates of transportation. To day the Escanaba rate touched rock bottom, 65¢ @ 70¢ per ton, while charters from Ashland and Two Harbors are reported at \$1.15 @ \$1.20 per ton. These figures are encouraging to the furnacemen and a good many purchases are looked for during the month of June. About 36,000 tons of new Ore were unloaded on the Cleveland docks during the week just closed, against 2500 tons for the same week in 1891. The shipments to the furnaces aggregated 20,000 tons, as compared with 6500 tons for corresponding week last year. There are indications of several sales of Red Hematite Bessemer Ores this week at about \$4.28 @ \$4.40 per ton. In fact, the Ore men look for good business during the month of June, despite the depression in the Pig Iron market.

**Pig Iron.**—The condition of the Pig Iron market continues so dull that not even the interruption of a holiday has any effect whatever. There is hardly a day that some furnace is not reported banked, or as going out of blast entirely, and production bids fair to be still further reduced during the coming week by the closing down of other near-by furnaces. A few sales—very few—have been made since last week's quotations were given, but these were in small amounts and only covered immediate wants. There still remains an overstock in the market, however, and it is, indeed, puzzling, to say the least, as to when the condition will be improved. Some comfort may be received, perhaps, from a reduction the past week of 5¢ per ton in the transportation of Coke, but taken as a whole the Pig Iron market has been practically lifeless. It is impossible to give the actual selling prices, as these are arrived at only by whatever can be agreed upon between buyer and seller. Nominal quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$17.50 @ \$18.00
Nos. 1, 2 and 3 Bessemer, per ton	15.00 @ 15.25
No. 1 Strong Foundry, per ton	15.00 @ 15.50
No. 2 Strong Foundry, per ton	14.00 @ 14.50
No. 1 American Scotch, per ton	15.00 @ 15.60
No. 2 American Scot h. per ton	14.00 @ 14.60
No. 1 Soft Silvery, per ton	15.50 @ 16.50
Mahoning and Shenango Valley	
Neutral Mill Irons, per ton	13.50 @ 14.00
Mahoning and Shenango Valley	
Red Short Mills, per ton	14.00 @ 14.50

**Nails.**—The market is only fairly firm, but there is a good demand for Wire. Steel Wire Nails are quoted at \$1.65 @ \$1.70, and Steel Cut Nails at \$1.60 @ \$1.65.

**Barb Wire.**—The supply of Barb Wire continues light. In fact, there is a scarcity of the article.

**Old Rails.**—The market is far from active, but a few sales of Old American at \$19.50 @ \$20 are reported.

**Manufactured Iron.**—The demand continues excellent, and the mills are well supplied with orders. Common Bar at 1.60¢ @ 1.65¢ is selling freely.

**Scrap.**—The market is dull, only a few unimportant sales being reported. No. 1 Railroad Wrought is quoted at \$17 @ \$17.50, and Cast Scrap at \$12.25.

## Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts.,  
CINCINNATI, June 1, 1892.

The only favorable feature to the Iron market this week has been an increase in the inquiry for forward delivery, but this has not resulted in much enlargement of business, but it has demonstrated that there are few, if any, sellers at concessions, and that while the sales have chiefly been of small lots, single carloads, they have been more numerous. There was a sale of 5000 tons No. 2 Foundry at \$10, f.o.b. Birmingham, and 1500 tons other kinds on this basis for early delivery. Efforts to buy Gray Forge at less than \$9 at the furnace found no sellers. It is not expected that there will be any material advance in prices of Pig Iron the ensuing month, as hot weather is already upon us, but it is a strong point gained that the decline has been stopped, and with reduced production and presumably a continued reduction in stocks it is recognized that there is a steady advancement in the right direction. Agricultural works are in the market for Iron, but they want deliveries running into next year on the basis of present prices, and do not find any furnaces that will entertain them. The melting of Iron by consumers in this district, while not very large, is fully up to the average at this season of the year, and there appears to be a more hopeful feeling prevalent among the trade in general, and all look for better things before the summer is over. Quotations unchanged, as follows:

Foundry.	
Southern Coke, No. 1	\$13.75 @ \$14.00
Southern Coke, No. 2	12.75 @ 13.00
Southern Coke, No. 3	12.25 @ 12.50
Ohio Soft Stone Coal, No. 1	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2	15.00 @ 15.50
Mahoning and Shenango Valley	16.60 @ 17.25
Hanging Rock Charcoal, No. 1	19.75 @ 20.00
Hanging Rock Charcoal, No. 2	19.00 @ 19.50
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.60 @ 16.00

Forge.	
Gray Forge	11.75 @ 12.00
Mottled Neutral Coke	11.25 @ 11.50

Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	18.75 @ 19.00
Lake Superior Car Wheel and Malleable	17.75 @ 18.00

## New York.

Office of *The Iron Age*, 96-102 Reade street,  
NEW YORK, June 1, 1892.

**Pig Iron.**—The past week would ordinarily have been very dull, and the intervention of a holiday did not make it any better. So far as the local trade is concerned, there have been no changes of any special consequence since our last report. There are some inquiries in the market, but consumers are very slow to take hold. They are purchasing small lots quite regularly, showing that the trade generally are in need of stock, but no disposition is manifested to anticipate their requirements to any extent. The reports current of very low prices being made on some brands of Iron do not seem to disturb the dealers in standard brands, who state that for such sales as they are now able to make they do

not find it necessary to lower their quotations. We quote Northern brands at \$15.50 @ \$16 for No. 1; \$14.75 @ \$15 for No. 2; \$13.50 @ \$14 for Gray Forge, tidewater. Southern Iron, same delivery, \$15 @ \$15.50 for No. 1; \$14 @ \$14.50 for No. 2 and No. 1 Soft; \$13.25 @ \$13.50 for No. 2 Soft; \$13 for Gray Forge.

**Spiegeleisen and Ferromanganese.**—A little business is being done in this line, but the transactions are in very small lots and quotations are nominal.

**Steel Billets and Rods.**—Small quantities of Billets are being taken by Eastern consumers, but no heavy deals have recently transpired. The quotation of \$24.50, tidewater, for Soft Steel Billets is maintained. Wire Rods are firm, the market being sustained by the curtailment of production brought about by break downs at one or more of the mills. It has been quite a remarkable fact lately that as soon as the repairs are completed at one mill another will drop out, causing an immediate rush among those having contracts with it to replace them with some other company. The price appears to be steady at \$35, tidewater.

**Steel Rails.**—The most diligent inquiry fails to unearth any transactions of consequence in this locality. A little business is being done in light Rails, but standard sections seem to be completely neglected. Quotations, however, are unchanged at \$30 at mill or \$30.75 tidewater.

**Manufactured Iron and Steel.**—The business now in progress is confined to small lots, but manufacturers are competing as vigorously for them as they would for heavier trade. The Plate mills appear to be especially anxious for work, to judge from reports current of the low prices now being made. Several large buildings are expected to be placed under contract this week, but any announcement concerning them would be premature. Nominal prices, subject to concessions on good specifications, are as follows: Beams, 2.25¢ @ 2.65¢ for small lots and 2.10¢ @ 2.50¢ for round lots, according to sizes; Angles, 1.9¢ @ 2¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.30¢ @ 2.75¢; Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.85¢ @ 1.95¢ for Tank; 2.05¢ @ 2.25¢ for Shell; 2.35¢ @ 2.65¢ for Flange; 2.55¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2¢ @ 2.10¢, delivered. Steel Axles, 2¢ @ 2.1¢, and Links and Pins, 2.05¢ @ 2.20¢; Steel Hoops, 1.9¢ @ 2¢, delivered.

**Merchant Steel.**—Business under this head has not been active. Quotations are continued—namely: Hot-Rolled Shafting, 1.90¢ @ 2¢; Machinery, 1.90¢ @ 2.10¢; Tire, 2¢ @ 2.25¢; Toe Calk, 2.20¢ @ 2.35¢, and Tool Steel, 5¼¢ @ 6¼¢, delivered.

**Track Material.**—The demand for Fastenings, which is governed entirely by the Steel Rail orders, is naturally very limited. Spikes are quoted at 2¢ @ 2.05¢; Fish Plates, angle or plain, 1.60¢ @ 1.70¢; Track Bolts, square nuts, 2.65¢ @ 2.75¢, and hexagon nuts, 2.80¢ @ 2.85¢.

**Old Material.**—The only transactions which have come to light in Old Material cover a sale of 400 tons of American Old Iron Rails, which brought \$17, f.o.b. Sound port, and 1500 tons of Old Steel Rails, which changed hands at \$13, also f.o.b., Sound port. The business in Scrap seems to be completely lifeless. Quotations on No. 1 Wrought are continued at \$16.50 on lighter.



## Metal Market.

**Copper.**—Business in this metal has been quiet. All accounts go to show that the consumption in the manufacture of electrical supplies continues on a large scale, and that considerable quantities are being used for other purposes. Still, the purchases making in this market are of ordinary character, and demand is not livelier than it was a month ago. The presumption is that consumers obtain from deliveries on old contracts sufficient supply to meet their requirements, and are indifferent about the future in view of favorable indications that there will be quite enough Copper to go around. Lake Superior Ingot is quoted at 12¢. Moderate-sized parcels have been sold at that and a shade less. Cakes and Bars are held at about 1¢ to 1¢ premium over Ingots. Of common Casting Copper moderate sales have been made at 11½¢, which price is generally quoted.

**Pig Tin.**—The market is still completely under the control of the "bull" interests. From that quarter bids are made that keep the remainder of the trade in line, and serve also to check any opposition movement, despite heavy spot supply and probable further large arrivals from Europe during the next 30 days. On actual sale 21½¢, cash, has been reached for 10-ton lots, prompt delivery, and that price was offered for 500 tons or any part for July delivery. For August and September 21.55¢ was paid, and for last half of the year, 21.60¢. The transactions involve at least 500 tons. May shipments from the Straits were advised as having been 2025 tons to Great Britain and America, and 150 tons to the Continent. Those for April were 1900 tons and 375 tons respectively. The fresh supply set afloat during the two months would appear to be considerably less than the average consumption for that period, thus indicating a strong position. On Wednesday's market, 21.55¢ was bid for June delivery, 21½¢ for July and 21.80¢ for September. Latest quotations from the Straits market were equivalent to 21½¢ in store, New York.

**Pig Lead.**—In this market there has been no improvement. Sales continue on a small scale and the demand from corrodors and other consumers is surprisingly small, considering moderate extent of their purchases last month. Spot supplies are very light and the offering from the West is without indication of uneasiness in that quarter, despite the sluggish condition of the market. Some business has been done at as low as 4.22½¢, but below 4½¢ was exceptional, and that price was named as an inside one at the close.

**Spelter.**—The market remains in somewhat peculiar condition, indicative of a virtual stand off between buyers and sellers, with remarkable stubbornness on both sides. A bid of as high as 4.95¢ was said to have been refused for a carload of Western on the spot, yet future shipments at 4.80¢ @ 4.85¢ are taking sparingly and bids of over 4½¢ are the exception.

**Antimony.**—The demand continues to be of routine character and prices are without important change. Current quotations are 11½¢ @ 11½¢ for Hallett's, 12¢ @ 12½¢ for LX, 12½¢ for Crown and 14½¢ @ 14½¢ for Cookson's, as to size and lot.

**Tin Plate.**—Compared with last week, there is no change in the situation. Spot prices are rather easy, although not quotably lower, while future shipments of Cokes are firmly held at 2½¢ @ 5¢ advance from recent lowest point. Business in both spots and futures has been on a very moderate scale. We quote as

follows for full weights: Coke Tina—Penlan grade, IC, 14 x 20, \$5.25; J. B. grade, do., \$5.35; Bessemer do., \$5.30; light weights, 100 lb, 10¢ less; 95 lb, 20¢ less; 90 lb, 30¢ less than full weight; Siemens Steel, \$5.37½. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75 @ \$5.80; IX basis, \$6.80. IC Charcoals—Melyn grade, ½ X, \$6.40; for each additional X add \$1.50; Allaway grade, \$5.75; Grange grade, \$5.85; for each additional X add \$1.20. Charcoal Terns—Worcester, 14 x 20, \$5.75; do., 20 x 28, \$11.30; M. F., 14 x 20, \$7.37½; do., 20 x 28, \$14.75; Dean, 14 x 20, \$5.45; do., 20 x 28, scarce; D. R. D. grade, 14 x 20, \$5.35; do., 20 x 28, \$10.30; Mansel, 14 x 20, scarce; do., 20 x 28, \$10.45; Alyn, 14 x 20, \$5.45; do., 20 x 28, \$10.60; Dyffryn, 14 x 20, \$5.65; do., 20 x 28, \$10.90. Wasters—S. T. P. grade, 14 x 20, scarce; do., 20 x 28, \$10; Abercarne grade, 14 x 20, scarce; do., 20 x 28, \$9.80.

## Coal Market.

The Anthracite Coal trade is quiet, but the demand is sufficient to absorb the surplus, preventing accumulation. Orders in hand are said to be sufficient to take up the greater part of the June allotment, 3,000,000 tons. Although apparently not warranted by the condition of the market, the companies seem to have decided that it was policy to advance prices for Chestnut Coal 15¢ per ton, in order to "even up" the schedule, and 25¢ was added for Western shipment. The official statement of production for the week ending May 21 is as follows, compared with the corresponding period last year:

Region.	1892. Tons.	1891. Tons.	Inc. Tons.
Wyoming.....	497,702	430,031	77,671
Lehigh.....	124,156	111,001	12,555
Schuylkill.....	234,937	229,164	5,773
Total.....	856,795	769,196	87,599
Year to date..	14,445,521	13,383,210	1,062,311

A dispatch from Pottsville says the miners of the Schuylkill Coal region are jubilant over an increase of 1% in the rate of wages. This is due to the advance in the market price of Coal, and a further increase is expected in the near future. With a few exceptions all of the best producing collieries of the Reading Company are now working, some four days a week and some full time.

According to a dispatch from Minersville, an immense basin of Red Ash Coal of unknown extent has been struck at Otto Colliery, near there, operated by the Reading Company. Preparations will be made at once to develop it, as it is of the finest quality and all above water level. The Reading Railroad Company also acquired control of the entire product of the Mt. Hope Colliery at St. Clair, operated by Garrett B. Linderman & Co., and the Oak Hill Colliery, near Minersville, operated by Leisenring & Co.

The Pennsylvania Railroad reports for the week 297,800 tons of Coal and the Reading 220,000 tons.

Vessel freights from New York to Boston and discharge 60¢ @ 80¢.

The Lehigh and Wilkesbarre new circular is as follows, f.o.b., less commission:

	Broken.	Egg.	Stove.	Chest-nut.
Honeybrook.....	\$4.00	\$4.25	\$4.25	\$4.30
Wilkesbarre.....	3.75	3.90	4.15	4.05
Plymouth Red Ash	3.85	4.00	4.30	4.25

Reading Free Burning is the same as Wilkesbarre. Lehigh Valley prices are the same. Special Coals are all higher than usual at this season of the year.

Bituminous Coal is steady at the prices prevailing for some months past, and the amount of tonnage placed is about the same as last year.

## Financial.

The strength of the bond market, resulting from the glut of money and consequent low rates of interest, is the most important feature of the week. Purchases made on Saturday alone amounted to \$1,650,000, principally in Reading issues at an advance, and for the week the aggregate approached \$3,000,000. The abundance of money was again demonstrated by about \$5,000,000 further increase of the bank reserves, so that the surplus now amounts to \$24,594,000. The June disbursements will add to the volume of money seeking investment. Now that gold shipments have ceased and Europe is buying bonds instead of selling them the financial horizon is supposed to be more cheerful. As one of our financial organs remarks, the worst that can be thought of has happened, unless the bidding ½ per cent. for the privilege of calling gold within a year may be considered ominous. The resumption of silver debates in the Senate started a foreign selling of securities which resulted in an advance in the rates for sterling exchange.

Another cheering circumstance is the subsidence of the Western floods and the improved aspect of the coming crop. Winter wheat suffers from excessive moisture through the entire grain belt, but spring wheat is more hopeful. The European situation also improves. Respecting the forthcoming international silver conference Henry Clews says: "At present it would be premature to indulge in any estimates of the probable outcome of the conference, so little being certainly known as to the real attitude of the several governments participating in it and the personnel of the delegates." Touching the gold movement, the London Economist regards the recent shipments from the United States as the natural effect of constant additions to the paper currency by the issue of notes in payment for silver. A return flow of gold to the States, however, will be looked for when harvest time approaches. The savings banks of this State are making a concerted effort to obtain authority from the Legislature for enlarging the scope of their investment securities and adopted resolutions to this effect at a meeting in the Chamber of Commerce. Washington dispatches state that the Stewart free coinage bill will probably pass the Senate, and there is a growing impression that if it does it will stand a chance of passing the House.

The stock market was generally strong. There was good buying of Atchison, Topeka and Santa Fé stock and bonds on the announcement of the conversion bond scheme. The grangers moved upward on news of more favorable weather at the West and of an improvement in the railroad situation. Reading and the other coal shares rose on news of an advance in the price of coal for June, and the showing of the Jersey Central since the lease was much better. Western Union moved upward to the best figures yet recorded. The Richmond Terminals were active and higher toward the end of the week in the expectation that Drexel, Morgan & Co. would undertake to reorganize the company. National Cordage, National Lead, Cotton Oil and Sugar Refiners' were in good request. The market was irregular on Friday morning in consequence of failures in London and also because of the revival of the silver question in Congress but later there was a recovery.

Quotations of Government bonds are as follows:

U. S. 4½s, 1891, extended.....	100
U. S. 4s, 1907, registered.....	116
U. S. 4s, 1907, coupon.....	116
U. S. currency 6s.....	106

Time money loaned freely at 2%, 30 to 60 days, longer dates 3 @ 3½%. Commercial paper is in good supply and offerings are promptly taken. Secretary Foster

regards the unexpended balance in the hands of Government disbursing officers as unnecessarily large, and proposes to call in considerable amounts.

Bar silver in London, 40 1 16d per ounce. New York dealers' price for silver, 87½¢ per ounce.

The sterling exchange market is higher on account of a demand for bills from arbitrage houses against sales of stocks for London account. It was thought that the advance rates may cause an early export of gold.

In general merchandise the markets are dull. Provisions have been held strongly at an advance. Breadstuffs were more active, with scarcely any change in prices for wheat, while corn and oats were lower on better weather West; coffee is dull, but steady; cotton very dull, few buying orders; sugars firm and fairly active.

Exports of merchandise from this port for the week \$6,812,000, and since January 1 \$175,069,500, against \$148,184,000 for the same time last year. Imports were \$10,197,000, and for the year \$235,424,000, against \$233,836,000 for the same time in 1891.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, June 1, 1892.

Prices for Pig-Iron Warrants have advanced, Scotch selling up to 40/11½, Cleveland to 40/7½ and Hematite to 51/4½. Scotch stocks have decreased 3000 tons, or to 453,000 tons, while the stock of Cleveland is down to 66,000 tons, a decrease of 11,000 tons. The strength of the market is due chiefly to continuance of the Durham strike and consequent depletion of supplies of Iron. The strike affects Cleveland chiefly, and returns show that no Iron was produced in the region last month. Rumors of a probable settlement of the strike caused anxiety to sell Hematites, but after 10,000 tons had been unloaded the market recovered. Some Barrow Steel works have had to suspend operations owing to the scarcity of Pig Iron.

The Pig Tin market has been very strong, prompts selling up to £98. 10. The advance is due to light spot stocks and moderate offering by holders, together with good consumption. Outside speculation is moderate.

Copper has been irregular, with the average of prices somewhat lower and affected by more or less conflicting reports regarding negotiations for regulation of production. Rumors that the Tharsis Company are holding aloof caused heavy selling on the belief that if the company do not agree to the proposition there will be much heavier offering. Some authorities state that the Tharsis will agree ultimately.

The Tin-Plate market has been less active. American buyers do not respond to the higher prices asked and forward business is scarce.

**Scotch Pig Iron.**—The market is wholly unchanged. Business moderate and at about former prices:

No. 1 Coltness, f.o.b. Glasgow.....	53/6
No. 1 Summerlee, " ".....	52/
No. 1 Gartsherrie, " ".....	50/6
No. 1 Langloan, " ".....	51/6
No. 1 Carrabee, " ".....	44/

No. 1 Shotts " at Leith.....	51/
No. 1 Glengarnock, " Ardrossan.....	50/6
No. 1 Dalzellington, " ".....	47/6
No. 1 Eglinton, " ".....	47/
Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 1/6.	

**Cleveland Pig.**—Business moderate, but owing to depleted stocks makers' prices are up to 40/6 for No. 3, f.o.b. Middlesbrough.

**Bessemer Pig.**—Demand does not improve, but light production and rise in warrants has caused an advance in makers' prices to 52/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

**Spiegel Eisen.**—There is very little doing and prices remain without change. English 20 % quoted at 77/6, f.o.b. shipping port.

**Steel Rails.**—No change in condition of the market. Demand continues slow. Heavy sections quoted at £4. 2/6, f.o.b. shipping port.

**Steel Blooms.**—Slow business and prices still nominal. Makers quote £4 for 7 x 7, f.o.b. shipping point.

**Steel Billets.**—There is little doing and no change in makers' prices. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. shipping point.

**Steel Slabs.**—The situation is without change. Sales continue light. Bessemer quoted at £4. 5/, f.o.b. at shipping point.

**Old Iron Rails.**—The market quiet and wholly unchanged. Tees quoted at £2. 17/6 and Double Heads at £3, f.o.b.

**Scrap Iron.**—A moderate business doing at former prices. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

**Crop Ends.**—Market very dull and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

**Manufactured Iron.**—No further change in prices and the demand slow. We quote, f.o.b. Liverpool:

Staff, Ordinary Marked Bars	8 10 0 @	£ s. d.	£ s. d.
" Common " "	6 5 0 @	6 7 6	
Staff, Bl'k Sheet, singles....	7 5 0 @		
Welsh Bars (f.o.b. Wales)....	5 10 0 @		

**Tin Plate.**—Prices about the same as last week, business moderate. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	13/9 @ 14/3
IC Bessemer Steel, Coke finish....	12/6 @ 12/9
IC Siemens " ".....	12/6 @ 12/9
IC Coke, B. V. grade 14 x 30.....	12/3 @ 12/6
Charcoal Terne, Dean grade.....	11/9 @ 12/

**Pig Tin.**—Market strong at the advance and fairly active. Straits quoted at £98. 15/ @ £98. 17/6, spot, and £98. 12/6 for three months.

**Copper.**—Operators are hesitant, prices barely steady. Merchant Bars quoted at £46. 2/6, spot, and £46. 12/6, three months' futures. Best selected, £51.

**Lead.**—Market quiet but firmer. Prices steady at £10. 15/ for Soft Spanish.

**Spelter.**—Demand has been fair and the market is firmer at £22. 10/ for ordinary Silesian.

John E. Cartwright, manager for Chamberlain, Turney & Co., Columbus, Ohio, has severed his connection with that firm, and has embarked in the Pig Iron brokerage business on his own account. Mr. Cartwright has been with Chamberlain, Turney & Co. for nearly five years. He

was formerly manager of their Chicago branch, and later came to St. Louis to assume control of their office here. Mr. Cartwright has had a long experience and enjoys the acquaintance and confidence of the trade at large, who will unite in wishing him well in his venture.

### Western Puddlers' Wages.

In a recent issue of the *National Labor Tribune*, published at Pittsburgh, appeared an article in reference to the new Bessemer steel plant which will probably be erected in Youngstown, Ohio, during this year. The statement was made that the Mahoning Valley mill owners must have considerable faith in steel billets for the future, and that they evidently do not believe the price will always be as low as it is now, from the fact that they propose to go into the business themselves. This article was copied into the *Youngstown Telegram*, and in a recent issue of that paper we find the following letter from H. O. Bonnell, president of the Mahoning Valley Iron Company of Youngstown, which will no doubt be read with considerable interest. The letter is as follows:

To the Editor of The Telegram:

SIR.—The *Labor Tribune* in a recent article copied into the *Telegram*, Saturday, says some very complimentary things of the Mahoning Valley iron manufacturers, and in referring to the proposed new steel plant, says that it would be unfair to make a basis of wages on the depressed market quotations of steel billets.

Now, it appears to me that the *Tribune* does not fully appreciate the situation. Steel is rapidly and surely supplanting puddled iron in almost every place in which iron has been a necessity. One ton of steel billets or slabs can be laid down in the mills of this valley to-day at a lower price than it is possible to produce a ton of puddled iron. This being the case, the inevitable conclusion will be that unless the cost of producing puddled iron is reduced steel will take the place of muck bar and the puddler's occupation will be gone.

Now, if the puddlers could only see the situation as it really is, it would seem that in order to keep the steel from driving them out they would be willing to make such reasonable concessions as would enable the mills to keep their puddling furnaces in operation.

While I do not say that such a course would stop the inroads of steel, I do think it would delay the day of idle puddling furnaces for some time to come, and doubtless prevent the erection of so many steel plants; for it is obvious that the more steel plants, the lower the price of steel billets, and the less work there will be for the puddlers.

It would be well, therefore, for the iron men to carefully study the situation, and see if it does not require concessions from them in order that they may keep in the procession, and not be dropped out.

With the most improved and best machinery and appliances, 1000 tons of steel billets can be produced daily with the labor of not over 200 men. There are now in the Mahoning Valley 477 puddling furnaces (counting each double furnace as two). These furnaces employ 954 puddlers, 954 helpers, 230 muck roll hands, making a total of 2144, without counting standing turn men.

These furnaces and men produce about 1050 tons of muck iron daily, equal to the product of the steel plant proposed. On the basis of four persons being dependent on each adult workman, the puddling furnaces of the valley support directly a population of 10,720.

Now, if the steel produced by the 200 workmen supplant the total product of the puddling furnaces by producing a better product at a lower cost, these 2144 workmen and their dependants will be compelled to seek other employment. Can they secure it in the valley under the proposed conditions?

It would seem, therefore, that the workmen should be careful not to take any stand that will result in the stoppage of all these puddling furnaces.

Besides all this, the owners of all these puddling furnaces are also interested, for if they are forced to abandon the manufacture of muck iron, the large amount invested in puddling furnaces and muck mills will be worthless. So the situation is grave enough to deserve the most careful attention from all concerned.

Yours very truly,  
H. O. BONNELL.



# HARDWARE.

## Condition of Trade.

**D**URING THE PAST week there has been little change in the volume of business or the tone of the market. Trade in general may be characterized as fair but without any special snap, buyers evidently being disposed to purchase only for the supply of their immediate requirements. This policy has been pursued so long that stocks throughout the country are light, as evidenced by the character of the orders received by manufacturers and jobbers. The effect of recent cold weather, rains and floods is also felt in different sections in diminishing the volume of business for the time being. The extent to which trade is influenced by such conditions is indicated in the fact that nearly all the special reports given below from representative houses in leading centers allude to them as diminishing or delaying orders. In the matter of prices there is little new to report, the changes which have taken place during the week being unimportant. The market, as a whole, while showing no improvement in the tone, has not developed any further weakness, but in some lines there is a disposition to slightly stronger prices. Manufacturers in one or two important lines are showing a conservative disposition in regard to the acceptance of orders for future delivery. Collections are only fair.

### Chicago.

(By Telegraph.)

There is no change in the condition of the general Hardware trade. Buyers, either on account of the unfavorable conditions of the country or for want of confidence in the future, are withholding orders and the demand from jobbers is consequently light. While it is true that there is some improvement in the conditions, yet the change is so small that it is scarcely noticeable. This condition of the market, however, does not affect prices, which remain steady, with a tendency toward a slight advance on some lines of staple goods.

### St. Louis.

(By Telegraph.)

There has been a steady improvement in the demand since the high water began to recede, which enabled merchants to conduct their business as usual. A large trade is noted in Agricultural Supplies and Garden Tools of all kinds. Lawn Mowers and Sprinklers, and in fact nearly every seasonable article, are having a good run. Prices do not show much change, except,

perhaps, in Carriage Bolts, which are weak, and Barb Wire and Wire Nails, both of which have a tendency toward lower prices. The outlook for a steadily increasing trade is encouraging, and prices are not likely to show much change either way for some time. Collections are only fair.

### Louisville.

**W. B. BELKNAP & Co.**—The demand is still seriously retarded by the unseasonable cold weather and unusual amount of rainfall. The lowlands are still overflowed or too wet for plowing and much of the corn even in Kentucky is still unplanted. This is bound to make the season late and a good deal of work which should have been done this spring will not be done at all. The grumbling is not confined to rural districts. In town the spring suits are uncalled for, overcoats are doing duty and furnace fires alive.

That goods are moving in present volume is some encouragement, but that volume is not sufficient to induce any change of price for the better. Scarcely any commodity, unless it be Sheet Iron, shows backbone worth talking about. Nails, Bars, Wire, while the mills confess themselves to be busy, and overbusy in some cases, are selling at the lowest known figures. There will come a turn some of these days which will undoubtedly surprise us, but in what shape or when it would be futile to predict.

The sound money men (and there are lots of them in the Western woods as well as in financial centers East) think that much of our lack of confidence proceeds from the disturbance by the silverites. There is no doubt that if the business views of Mr. Harter, for example, as set forth in the last *Forum*, were generally accepted, we should speedily have a recognized standard of value and re-establishment of confidence in all financial and commercial transactions.

There has been an unusual demand this year for Poultry Netting and Fly Screen, but it is useless to attempt to secure an immediate shipment from any of the mills.

Altogether we think we are doing pretty well, despite the very close competition and complaints from some of the manufacturing points.

### Philadelphia.

**SUPPLEE HARDWARE COMPANY.**—The general conditions of trade remain about the same as last reported, the aggregate of sales being quite equal to the then reported conditions, and everything in trade circles has continued favorable since that date. So far as has been possible to ascertain, the trade needing goods throughout the country have no hesitancy in buying for their anticipated demands.

While heavy rains have interfered with trade in some localities, it is more than made up by improved trade in other sec-

tions, as it is a well-known fact that no section of the country has any overstock of goods upon their shelves in reserve.

Indeed, we often wonder if the starving of stocks, which has been practiced largely for the last year, has not been of disadvantage to the merchants themselves.

Season goods continue in active demand and manufacturers of season specialties appear no nearer completing orders than they were one month ago.

Shelf Hardware is in a little more active demand during the last few weeks.

Collections, as a rule, show an improvement, although in certain sections merchants are asking for temporary indulgence.

### New Orleans.

**A. BALDWIN & Co.**—There is no new feature in the situation here. Business, if anything, is duller. The dangerous condition of the river and the car drivers' strike in the city have had the effect of bringing business almost to a standstill. We do not look for much of an improvement in the next 30 or 60 days; in fact, we have about settled down to a usual summer trade.

### Baltimore.

**CARLIN & FULTON.**—The frequent rains and continued cool weather interfere very much with business, the activity of which depends so greatly on clear skies and good roads.

While the crops have been undoubtedly retarded in their growth, from what we can hear, the prospects are good for both fruit and wheat, though corn planting has been greatly interfered with. As long as there is any doubt as to the abundance of a crop, the trade is timid about purchasing such goods as depend for their sale upon a full harvest, but let the danger point be passed and every buyer must have his wants supplied immediately, which necessitates the carrying of immense stocks by the jobbers.

While there has been a great demand this spring for some staples, general Hardware has not moved in sufficient volume to cause any scarcity of supply, nor stiffening in price, and as long as the prices remain stationary buyers are seldom inclined to purchase more than their actual necessities require.

### Omaha.

**LEE-CLARKE-ANDRESEN HARDWARE COMPANY.**—The few pleasant days during the past two weeks have caused a visible brightening of the outlook. While farm work has been greatly delayed by reason of the immense amount of rainfall, there have been enough pleasant days to allow of considerable planting on the uplands, and the farmers being fully alive to the importance of getting the seed into the ground, are taking advantage of every temporary spell of favorable weather. It is somewhat consoling to remember that

last year the spring season came in very late, and yet Nebraska broke the record on her corn crop. Business, both in a wholesale and retail way, is very largely dependent upon the weather. Merchants are purchasing from week to week such goods as they require, and at no time have any great amount charged up to them. At the same time, the total purchases for the season have been unusually large. The general situation may be summed up as in a very satisfactory condition, as also the volume of business.

#### St. Paul.

**FARWELL, OZMUN, KIRK & Co.**—Trade in all lines is running along smoothly. It has improved decidedly in the last week. The weather has been fine and trade has responded promptly. The volume of jobbing business in the twin cities for the month will probably hardly equal the amount of sales in May of '91, but the difference will be very small. Prospects for June trade are excellent.

Collections are yet slow, on account of farmers being still engaged in putting in their crops, and, besides, the roads are still bad and would prevent a great deal of the grain that is still unmarketed from being brought to the elevators, even if the farmers were not otherwise engaged. It is expected that a great deal of grain will be marketed in June, and that collections will be largely benefited thereby.

Prices of Hardware in all branches are fairly well maintained. Staple goods are very low, but there has been but little change in them since our last.

#### Cleveland.

**THE W. BINGHAM COMPANY.**—Much to our surprise, trade for the past two weeks has kept up remarkably well. This section, like most others in the country, has been deluged with rain, we having had 21 rainy days out of 27 this month. What it portends for the future, however, we cannot say. Judging from the orders, merchants are not anticipating their wants any, but buying merely from hand to mouth. Prices remain without much change, Wire Nails, perhaps, being a little weaker. Local retailers report a fair trade, and that the machinists' and manufacturers' trade is looking up. Collections are poor.

#### Portland, Ore.

**FOSTER & ROBERTSON.**—Since the convening of the Presbyterian General Assembly here there has been a marked improvement in our weather, and consequently an improvement in trade. Everything so far points to the harvesting of the largest crop ever produced in this section. Of course there are chances still that hot winds may do some damage, but that is about all there is to fear. There has been no change to note in prices since the cut made in Wire and Steel Cut Nails, reported in our last letter. The most unpleasant thing we have to face now is the annual rise in the Columbia River. The cool weather has kept back the water, and now that the warm weather has set in, it is likely it will bring it all at once. There

is no damage to result. The only trouble is having to move from basements, thereby making it inconvenient to handle our trade.

#### Boston.

**BIGELOW & DOWSE.**—While we have reports from the West of floods, and an unusual amount of rain over New England, Lumber interests are suffering from a lack of water in the rivers, and from present appearances a large proportion of the logs will be laid up in the streams far away from the mills, which will not have half a supply this year.

Notwithstanding this lack of water in the lumber districts, there has been enough rain for the farming interests, and our country never looked more beautiful and the crops were never more promising. All of the granite quarries have been shut down by a disagreement between the manufacturers and the workmen, but it is reported that the latter are returning to work again. As this is an important industry in this section, it is hoped the differences will be soon settled, as if it continues any length of time it will bring heavy losses to all concerned.

The volume of business for May will exceed that of last year. June would naturally show a falling off from May sales, but the present outlook would indicate that it will hold its own with previous years. Prices show but few changes. Lawn Mowers are selling freely, and it is pleasing to note that notwithstanding the low prices being made for cheap and trashy machines, the better grades still hold the market and their sale increases.

The sale of Poultry Netting is beginning to show a falling off, and Window Screens, Wire Doors and Wire Cloth are coming to the front.

The prospect for a large crop of hay is very good, and Scythes and other Haying Tools are being called for.

The low prices for Steel Cut and Wire Nails do not stimulate extra sales. People think that there is no possible reason for any advance, and they may be lower, and are buying only for immediate wants. One dollar and eighty cents for Standard Wire Nails seems low, but they can be bought for a less price.

#### San Francisco.

**HUNTINGTON - HOPKINS COMPANY.**—We have experienced quite a spurt in trade since ours of the 11th. Particularly is this true with the Agricultural Machinery houses, they being exceedingly busy sending out machines and extras through the country where they are getting ready for the season's harvest, and unless all indications fail it will be a large one. Collections are difficult to make, and will be until the crops are in a condition on which to realize loans.

The Iron and Nail market is still in an unsatisfactory condition, and no improvement is expected until harmony is restored between merchants and manufacturers. The local Cordage factory issued a card on the 13th inst., placing Sisal and Duplex Rope in the same column, advancing the former  $\frac{1}{4}$  cent and the latter 1 cent per lb., Manila was also advanced  $\frac{1}{4}$  cent.

Not much occurs with the Pacific Coast Hardware trade at this season of the year that would interest your readers. The National Editorial Association are now doing the State, and as they come from every way the general Eastern public will no doubt be furnished with some interesting information through the respective papers of the members, upon their return home.

#### Notes on Prices.

**Wire Nails.**—The condition of the Wire Nail market remains substantially as it was a week ago, with perhaps some improvement, as manufacturers are willing to meet the extreme prices which were then prevalent. A good many orders have recently been booked, and most of the large buyers have covered their wants for some time to come. The market is, however, without any special strength, and the trade are evidently not anticipating any important advance in price. Quotations are \$1.55 for round lots at factory, but concessions are made from this figure. Small lots from store in New York are held at \$1.85.

*Chicago, by Telegraph.*—Jobbers report a fair demand, but the aggregate sales for the month are not what they would have been under more favorable circumstances. Manufacturers have evidently touched bottom on prices and are not looking for orders. Jobbers who last week attempted to place orders at the prices previously named were unsuccessful and were met with an advance of 10 cents per keg above the lowest price at which Nails have been sold in Chicago. Jobbers are quoting \$1.60 rates in carload lots, and \$1.65 rates in small lots. The manufacturers who were responsible for jobbers being enabled to make these prices have had time to deliberate over the prices they made and have spent most of the recent days in figuring up the loss which was incurred by hasty action and insufficient consideration of the results. They have determined, however, not to duplicate orders on the same basis, and will wait until there is a more urgent appeal from jobbers before they enlarge their plants or establish new factories.

**Cut Nails.**—Manufacturers are quoting freely for delivery during the present month at substantially the same prices as have been current, but are reluctant to make quotations for deliveries in July or August at prices now ruling. The uncertainty as to what will be the wages of the Nail cutters after July 1, with a possibility that they may be higher, makes the mills unwilling to accept contracts based on present costs. For carload lots of Steel Nails at Western mills a fair quotation is \$1.45 @ \$1.47 $\frac{1}{2}$  on a 30-cent average. In the East, quotations are on a basis of \$1.55 at mill for Steel Nails, freight being equalized with competing points. A concession of 3 cents a keg is made on Iron Nails, and orders of 1000 kegs or more of either Iron or Steel nails obtain a concession of 5 cents. Small lots from store in New York are quoted at \$1.75.

*Chicago, by Telegraph.*—The demand for this class of Nails is very slow, country



trade being affected by the conditions brought about through wet weather. From city consumers the demand is larger in proportion than for Wire Nails. Manufacturers have booked a great many orders for summer and fall delivery and find themselves in a favorable condition for keeping their works in operation during the summer. They quote \$1.60 rate, 30-cent average, Chicago delivery, but it is the opinion that this price could be shaded on desirable orders. Jobbers are quoting \$1.65 rates from stock.

**Barb Wire.**—Most of the mills are busy on orders, but the volume of business is moderate. Prices are without change and well maintained on a basis of \$2.65 for Galvanized Four Point at mill. Small lots from store in New York are quoted at \$3.10, an abatement of 10 cents being made on carloads.

*Chicago, by Telegraph.*—The demand is much lighter than it has been any time since early spring. Manufacturers have now caught up with their orders, and are soliciting trade and promise prompt shipments. Painted Wire is quoted at \$2.25, and Galvanized at \$2.75, at mill. From store jobbers quote \$2.90 in carload lots and \$3 in small lots for Galvanized, and 50 cents a hundred less for Painted.

**Shot.**—An advance of 5 cents has been made in Shot, as per the following quotations, which are announced under date May 31:

Drop Shot, up to B, 25-pound bag.....	\$1.40
" " " " " " " " " " " " " " " " " "	.85
B and larger, 25-pound bag. ..	1.65
" " " " " " " " " " " " " " " " " "	.40
Buck and Chilled, 25-pound bag.....	1.65
" " " " " " " " " " " " " " " " " "	.40
Dust Shot, 25-pound bag.....	2.00
" " " " " " " " " " " " " " " " " "	.45

In lots of 2000 pounds and upward a discount of 5 cents per bag will be allowed. Terms net cash 30 days, or 2 per cent. discount for cash in ten days.

**Double-Pointed Tacks.**—At a meeting of the manufacturers of Double-Pointed Tacks, held last week, the following revised list was adopted. It is subject to a discount of from 90 to 90 and 10 per cent. Terms, net 30 days, freight allowed to points on or east of the Missouri River:

*Blued, in Papers.*

No.....	9	10	11
100 in papers, per dozen..	\$1.20	1.30	1.40
120 " " " "	1.45	1.55	1.70
144 " " " "	1.80	1.95	2.10
No.....	12	14	16
100 in papers, per dozen..	\$1.60	1.85	2.00
120 " " " "	1.90	2.25	2.40
144 " " " "	2.40	2.80	3.00

*Tinned, in Papers.*

No.....	109	110	111
100 in papers, per dozen..	\$1.35	1.45	1.60
120 " " ..	1.65	1.75	1.90
144 " " ..	2.05	2.20	2.40
No.....	112	114	116
100 in papers, per dozen..	\$1.85	2.15	2.40
120 " " ..	2.25	2.60	2.90
144 " " ..	2.80	3.25	3.60

*Blued or Coppered, Bulk.*

No.....	9	10	11
100 pound kegs, per pound.	\$0.46	.42	.41
No.....	12	14	16
100-pound kegs, per pound.	\$0.40	.39	.39

**Tinned, Bulk.**

No.....	109	110	111
100-pound kegs, per pound.\$0.55		.51	.50
No.....	112	114	116
100-pound kegs, per pound.\$0.49		.48	.48

**Enterprise Sad Irons and Molasses**  
**Gates.**—Enterprise Mfg. Company, Philadelphia, for whom J. C. McCarty & Co. are agents, 97 Chambers street, New York, have announced the following changes in list prices, to take effect June 1. These prices are subject to the same discount as is allowed by the company on their other goods:

*Sad Irons.*

No. 50, Nickel Plated, per set	\$1.20
No. 55, Plain Polished, "	1.12
No. 50, Nickel Plated, Nos. 1, 2 or 3, with Handles, per doz. Irons	6.90
No. 50, Nickel Plated, Nos. 1, 2 or 3, without Handles, per doz. Irons	4.45
No. 55, Plain Polished, Nos. 1, 2 or 3, with Handles, per doz. Irons	6.45
No. 55, Plain Polished, Nos. 1, 2 or 3, without Handles, per doz. Irons	4.00
No. 60, Nickel Plated, per set	1.40
No. 65, Plain Polished, "	1.25
No. 60, Nickel Plated, Nos. 1, 2 or 3, with Handles, per doz. Irons	7.70
No. 60, Nickel Plated, Nos. 1, 2, or 3, without Handles, per doz. Irons	5.25
No. 60, Nickel Plated, No. 4, with Handles, per doz. Irons	9.25
No. 60, Nickel Plated, No. 4, without Handles, per doz. Irons	6.80
No. 65, Plain Polished, Nos. 1, 2 or 3, with Handles, per doz. Irons	7.20
No. 65, Plain Polished, Nos. 1, 2 or 3, without Handles, per doz. Irons	4.75
No. 65, Plain Polished, No. 4, with Handles, per doz. Irons	8.25
No. 65, Plain Polished, No. 4, without Handles, per doz. Irons	5.80
Extra Handles, per doz.	2.45
Improved Sad Iron Stands, per doz.	.75
No. 70, Nickel Plated, either Nos. 1, 2 or 3, per doz. Irons	5.25
No. 75, Plain Polished, either Nos. 1, 2 or 3, per doz. Irons	4.50
No. 71, Nickel Plated, either Nos. 1, 2 or 3, per doz. Irons	5.50
No. 76, Plain Polished, either Nos. 1, 2 or 3, per doz. Irons	4.75
No. 80, Nickel Plated, per doz. Irons with Handles	9.25
No. 85, Plain Polished, per doz. Irons with Handles	8.25
No. 82, Nickel Plated, per doz. Irons with Handles	6.75
No. 87, Plain Polished, per doz. Irons with Handles	6.00
No. 72, Nickel Plated, per doz. Irons	5.50
No. 77, Plain Polished, per doz. Irons	4.75
No. 90, Nickel Plated, per doz. Irons	5.75
No. 95, Plain Polished, per doz. Irons	5.25
No. 100, Nickel Plated, per doz. Irons	4.75
No. 105, Plain Polished, per doz. Irons	4.00
No. 110, Nickel Plated, per doz. Irons	3.00
No. 115, Plain Polished, per doz. Irons	2.50
No. 120, Nickel Plated, per doz. Irons	1.40
No. 125, Plain Polished, per doz. Irons	1.10
No. 550, containing Nos. 82, 90 and set No. 50 Irons	3.75
No. 555, containing Nos. 87, 95 and set No. 55 Irons	3.25

*Molasses Gates.*

No. 2, per doz.....	5.50
No. 3, per doz.....	6.00
No. 4, per doz ...	6.50

**Holt's Wagon Jacks.**—The following are the list prices of Holt's Wagon Jacks, manufactured by Charles Morrill, World Building, New York. They are subject to a discount of 20 and 5 per cent.:

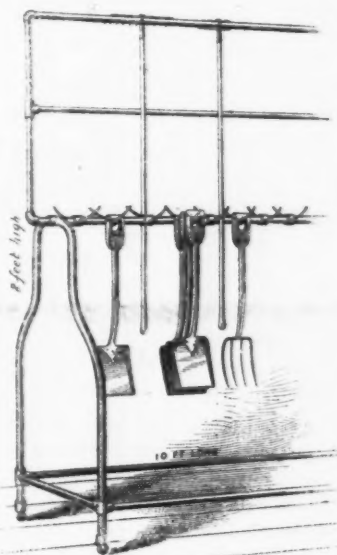
	Per doz.
No. 1.....	\$15.00
No. 2.....	18.00
No. 3.....	24.00

**Glass.**—The market is quiet and business light. The demand for American and imported Glass seems to be about equally divided, with no change in the price of either. The decision to run the factories until July 1 has ceased to cause comment, although this action on the part of the manufacturers put a stop to the temporary boom caused by the first announcement of closing down early. The opinion is generally expressed that business for the summer will be quiet, with a hope that the fall will bring a greater demand for Glass. While the remark is

frequently heard that there is no reason why a Presidential year should be an off year for business, it nevertheless remains a fact that political uncertainty does affect business enterprises to a greater or less extent. This may account in a measure for the quiet condition of the Glass trade. Quotations remain unchanged upon the following basis: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 80 and 5 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

## Iron Pipe Rack for Steel Goods.

**T**HE ACCOMPANYING ILLUSTRATION, Fig. 718, of a rack for Steel goods, made of wrought-iron pipe, represents a rack in use by a Hardware firm in



*Fig. 718.—Iron Pipe Rack for Steel Goods.*

one of the prosperous towns of Massachusetts. It is 8 feet high, 10 feet long, and is provided with casters, so as to move it as desired. Hooks upon which to hang D-handled goods are placed on each side of the center bar, while Hoes, Rakes, &c., are hung upon the higher bars. It is suggested by the firm that a rack of this description might be made by extending the uprights to which the casters are attached to the top of the rack, with double the number of horizontal bars, thereby giving double the amount of room for hanging goods.

W. DODMAN, 103 Chambers street, New York, has recently taken the agency for the Letort Axle and Machine Works, F. Gardner & Sons, proprietors, Carlisle, Pa. These works have been in existence 12 years, and are in the hands of practical men, who are referred to as turning out an excellent quality of Axles. We are advised that the addition of Mr. Dodman's business to that already enjoyed by the works has obliged them to request their customers to be patient until the works can catch up with their orders.

## Supplement to The Iron Age Standard Hardware Lists.

SINCE *The Iron Age* Standard Hardware Lists for use in price books were published a few months ago changes have been made in the lists of Wire Nails and Wrought-Iron Goods, and in order to bring this collection of lists up to date a supplement has been issued, showing revised and additional lists on the following goods:

STANDARD WIRE NAILS.  
MISCELLANEOUS WIRE NAILS.  
HOOKS AND STAPLES.  
STAPLES.  
HASPS AND STAPLES.  
AWKING HOOKS.  
S-HOOKS.  
TRAP-DOOR RINGS.

Since this collection of lists was put on the market we have received a number of letters from the trade referring to their convenience, and their adaptability to the use for which they were intended—cutting

From letters recently received from Hardwaremen in both retail and jobbing houses we make the following extracts:

We find the lists very convenient, and take pleasure in recommending this method.

### Wrought Iron Goods.

List  
March 17, 1892.

Inch....	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/2
Hooks and Staples.....	1.20	1.20	1.25	1.50	7.00	7.50	8.00	8.00	9.00	9.00
Staples only .....	1.20	1.20	1.25	1.50	7.00	7.50	8.00	8.00	9.00	9.00
Inch....	4	4 1/2	5	5 1/2	6	7	8	9	10	12
Hooks and Staples.....	10.00	11.00	12.00	13.00	14.00	22.00	25.00	28.00	31.00	36.00
Staples only .....	5.25	6.50	8.00	9.00	10.00	14.00	16.00	18.00	20.00	24.00
Hasps and Staples.....	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hasps and Staples, with Hook.....	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20

From Standard Hardware Lists, Supplement.

out and inserting in price books. Some of these letters we refer to below, as we are confident that many in the trade who are not familiar with the lists will find a considerable saving of time and labor connected with their use.

It saves considerable time in making a price book, and the condensed form is a great advantage.

I have inserted the lists in my price book and find them a great help for pricing Hardware.

### Wire Nails.

Card  
April 11, 1892.

Advance above 60d.

	2	3	4	5	6	7	8	9	10	12	16	20	30	40	50	60d
Common Fence, Shingling, Flooring and Common Brads.....	\$1.60	1.20	.90	.90	.75	.75	.60	.60	.50	.45	.45	.35	.25	.25	.10	base
Common & Car Barbed Casing & Smooth Box.....	1.75	1.35	1.05	1.05	.90	.90	.75	.75	.65	.60	.60	.50	.40	.40	.25	....
Barbed Box.....	1.90	1.65	1.40	1.25	1.05	1.05	.90	.90	.80	.75	.75	.65	.55	.55	....	....
Slatting.....	1.40	1.20	1.00	.90	....	....	....	....	....	....	....	....	....	....	....	....
Smooth Finishing.....	1.90	1.65	1.45	1.25	1.10	1.10	.90	.90	.75	.65	.65	.60	....	....	....	....
Fine.....	1.90	1.60	1.25	....	....	....	....	....	....	....	....	....	....	....	....	....
Clinch.....	1.80	1.40	1.00	1.00	.90	.90	.80	.80	.70	.60	.60	.50	....	....	....	....
Hinge.....	....	....	1.50	....	1.25	....	1.00	....	.90	.85	.85	.80	....	....	....	....
Wire Spikes, all sizes..	.50 advance.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Inch....	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/2	4	4 1/2	5	6	6 1/2
Lining.....	\$2.50	2.20	1.90	....	....	....	....	....	....	....	....	....	....	....	....	....
Barbed Roofing.....	2.00	1.75	1.50	1.40	1.25	....	1.10	1.05	.90	....	....	....	....	....	....	....
Barrel.....	2.00	1.75	1.50	1.40	1.20	1.00	.90	....	....	....	....	....	....	....	....	....

One Arrangement of Wire Nail Card in Standard Hardware Lists, Supplement.

A copy of this supplement will be sent, without charge, on application to those who have purchased the Standard Hardware Lists.

These lists are carefully arranged in clear and condensed form, and printed on only one side of the paper, so that they can be cut out and inserted in price books. The Wire-Nail card is given in two forms, so that those using the pamphlet can make use of the one most convenient for their purpose. We give herewith some of the lists in *fac-simile*, which, besides illustrat-

From a well known Boston house we have the following reference to their utility for connection with price book use:

Your lists are the best thing we have ever got hold of for use in our price books. All our salesmen are using them and speak in the highest terms of their adaptability for the purpose for which they are intended. We shall recommend these lists to any one in want.

The representative of a prominent house in Pittsburgh writes thus:

You certainly must have heard "a voice as of one crying in the wilderness" when the inspiration struck you to publish your lists. They are certainly the right thing and fit exactly in the right place. Not too large, nor too small; neat, condensed and easily read. I think I appreciate them the more for the reason that when I first read of their publication I was just starting a new price-list book, and they saved me hours of labor and worry. I think I voice the sentiment of my own craft (commercial travelers) and the trade generally when I say they could not well be im-

We have used a number of your Standard Hardware Lists with so much satisfaction that we are unable to suggest any improvements.

### S Hooks.

List Mar. 17, 1892.  
Price per gross.

Inch.....	1 1/4	1 1/2	2	2 1/4	2 1/2	2 3/4	3	3 1/2
Plain.....	\$6.00	6.75	7.25	8.50	9.50	....	11.50	....
Blunt Plain.....	4.00	4.75	5.50	6.50	7.50	8.50	9.50	13.00
Galvanized.....	8.00	9.25	10.50	12.00	14.00	....	16.00	....

From Standard Hardware Lists, Supplement.

Your lists are compact, well designed and executed and well adapted to the purpose in view.

We find them to fill a very long-felt want and we certainly appreciate your success.

The cutting-out lists for price books that you publish are worth much more than the price to any one that has use for them, and for the use for which they are intended could not be bettered.

I find them well adapted for the use which they are intended for. Your price book and lists are very useful and convenient, more so than anything I have ever had on my desk.

I find your Standard Hardware Lists one of the most complete and handy collections of lists I have seen. By putting the discount in pencil at bottom of page we have the thing complete for ready reference.

I find your lists very convenient for placing in my price book and handy to refer to at any time.

The method you have adopted for publishing Hardware Lists is certainly a success. All these lists might be obtained from other sources, but not in so con-

### Hasps and Staples.

List Mar. 17, 1892.  
Price per dozen.

Inch.....	4	5	6	7	8	9	10	12
Plain.....	\$0.84	.90	1.00	1.10	1.30	1.70	2.00	2.60
Japanned.....	1.00	1.10	1.20	1.30	1.60	2.00	2.30	3.10
Galvanized.....	1.50	1.60	1.80	2.00	2.50	3.00	3.50	4.50
Extra Heavy.	....	....	....	....	....	....	....	....
Plain.....	....	1.36	1.50	1.70	2.00	2.30	3.50	....
Japanned.....	....	1.60	1.75	2.00	2.35	2.70	4.25	....
Galvanized.....	....	2.50	2.75	3.00	3.50	4.00	6.00	....
Hasps and Staples, With Hook.	....	....	....	....	....	....	....	....
Plain.....	1.20	1.40	1.60	1.80	2.20	2.50	3.84	....
Japanned.....	1.40	1.65	1.90	2.10	2.60	3.00	4.50	....
Galvanized.....	2.25	2.50	3.00	3.50	4.00	4.50	7.00	....
Extra Heavy.	....	....	....	....	....	....	....	....
Plain.....	....	1.80	2.00	2.30	2.60	2.90	4.50	....
Japanned.....	....	2.10	2.35	2.70	3.00	3.40	5.25	....
Galvanized.....	....	3.50	4.00	4.50	5.00	5.50	8.00	....
Bent Hasps and Staples.	....	....	....	....	....	....	....	....
Plain.....	1.10	1.30	1.40	1.60	2.00	2.30	....	....
Japanned.....	1.30	1.50	1.60	1.85	2.30	2.50	....	....
Galvanized.....	1.75	2.00	2.25	2.50	3.00	4.00	....	....

List for Hasps and Staples, Standard Hardware Lists, Supplement.

ing the manner in which they are arranged, will be of service to some of our readers in this form.

proved upon, and we are certainly under obligations more deep than their cost for their collection and publication.



venient a manner, and where time is an object it pays to get them all in shape and ready to paste in price book.

I find your Hardware Lists so convenient that I use them in original form instead of cutting them up for the price book, as designed.

We like the list very much and would not be without it.

### Hardware Charlie's Screen-Wire Holder.

**F**ACH & HOTLES, Mascoutah, Ill., are introducing this article, as illustrated herewith, a description of which in its original form was given in *The Iron Age* June 11, 1891. Improvements have been made in

the holder is easily operated and the Cloth is easily adjusted on the rollers so as to unroll from the under side. Each one is securely packed in a rack ready for shipment, the weight being 40 pounds, and may be obtained either from the factory or from A. F. Shapleigh Hardware Company, St. Louis, Mo.

### The Summer Outing.

BY A. F. G.

**T**HE PRACTICE of giving vacations, and paying salaries during the absence of employees, is so universal in the city that each year preparations are made, locations for spending the time are selected and arrangements perfected long

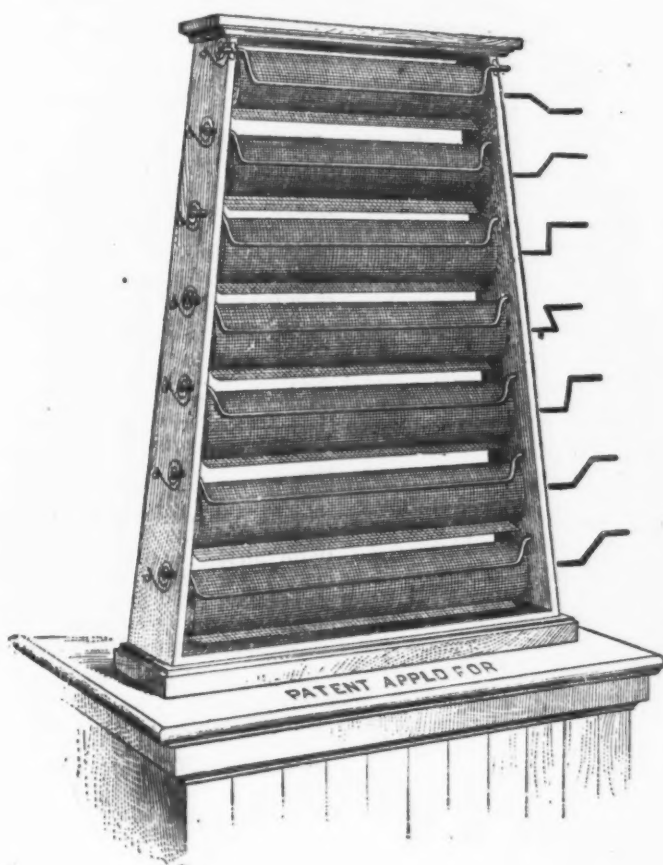
because the readers of the *Iron Age* are supposed to be unfamiliar with them, but to emphasize the fact that if these men who work from five to ten hours a day feel the need of an annual vacation, those men who live in smaller places need a vacation much more.

In the majority of stores outside of cities clerks and proprietors are usually found in the store at 7 o'clock in the morning, and remain until 9 or 10 o'clock at night. It is often the case that these stores keep open at least a part of all legal holidays, and too often a part of Sunday is devoted to posting up the books and straightening up generally. Is it any wonder that men become prematurely old, business becomes a drudgery and interest in the work is lost? We would urge an annual vacation for every one in every store, as there are few establishments in which one man or boy could not be spared at a time for a week or ten days during the months of July and August; and by this arrangement each one in the store could have an outing.

To inaugurate this reform in stores where vacations have not been in order it is suggested that the proprietors let the boys understand that they are sure of having a vacation this year, that their salaries will be paid during their absence, and that they can make their plans for having a good time. One year's trial will probably demonstrate the advantages of making the custom a permanent one. After the proprietor has decided upon the time he will be away on his vacation, let the boys arrange among themselves the order of their going as best suits their plans, submitting their decisions to the proprietor for his approval and revision. City people usually seek the country for recreation, while country people find an equal amount of pleasure in a city. There is no better educator than travel, seeing new things, associating with people whose ideas are new, learning new methods of exhibiting and selling goods, modern arrangements of stores, and the thousand and one useful items of information an active mind will collect during a vacation. Make the trial this summer and see if it does not pay in dollars and cents.

### R. Heinisch's Sons Company.

**T**HE ORIGINATOR of this company was R. Heinisch, who began the manufacture of Shears and Scissors in 1825. In 1871 the name was changed to R. Heinisch's Sons, and the firm has been incorporated as R. Heinisch's Sons Company during the present year. During the 67 years since the establishment of the business improved methods in the manufacture of these goods have been introduced; though the shear of to day differs little in general appearance from that of 25 years ago many improvements in minor parts have been made. The company are in a position to sustain the reputation which Heinisch's Scissors and Shears have so long enjoyed, and are now giving particular attention to the finish of their goods. Their factory is light, clean and



Hardware Charlie's Screen-Wire Holder.

its construction, however, since that time, consisting of a crank handle on each wood roller, with which to re-roll such Wire Cloth as has not been cut from the roll, easily and quickly. The tension springs have also been improved, so that there is no liability to get out of order. The wood work on the holder is walnut finish, strongly dovetailed together and varnished, while the iron work is finished in japan. The holder carries seven rolls of Wire Cloth, sizes as follows, viz., 24, 26, 28, 30, 32, 34 and 36 inches, is placed and fastened on top of counter and takes but 11 inches of space at base. The Wire Cloth is easily put on the wooden rollers, either in rolls of 50 feet or 100 feet, and the cloth will keep in shape until the last foot is taken from the roll. The point is made that the use of the holder increases the sale of Wire Cloth by the attractive manner in which it is displayed, and that

in advance of the time for going. In fact, the exodus is so great that to secure accommodations at any fashionable or semi-fashionable resort, application must be made early. Proprietors are not behind in the general desire to get away from the city, and while the employee has ten days to two weeks for his vacation, the proprietor may be away a month or even longer. The wholesale houses close at from 12 to 3 o'clock every Saturday afternoon, some from June 1 to September 1, while others do not begin early closing until the first of July. Business hours in the city are usually from 8 a.m. to 6 p.m. among the wholesale houses and offices. Those holding responsible positions, having the management and oversight of business, as a rule are found at their desks from half past eight or ten in the morning, and leave business from three to five in the afternoon. These facts are mentioned, not

comfortable, and is supplied with modern machinery and all the necessary appliances for turning out an extra fine line of goods. The different departments are under the supervision of competent foremen and the goods undergo a thorough inspection after each operation. It may be interesting to know that each pair of shears or scissors passes through the hands of some 60 operators from the time the raw material is taken in hand until the article is finished. The company issue an illustrated catalogue and price list of their goods under date of May, 1892. Their New York office and salesrooms are at 90 Chambers street, New York.

### Louisville.

(From a Special Correspondent.)

THE WEATHER having assumed a normal aspect again, general trade will not be slow in righting itself. There is in sight a good demand for heavy hardware. True, there are no large new enterprises, especially in Railroad work, but the stone quarries and miners are kept very busy, with plenty of work ahead, and the railroad supply houses have constant demands for tools and store material. Extra care and diligence are manifested in track repairs and improvements, as the demands on the present roadways are enlarging constantly in the shape of heavier cars, locomotives and longer trains.

The railroad companies are in far better condition than they were a year ago, when some of them were literally unable to have disabled rolling stock repaired, but side tracked thousands of cars until better times should approach.

The past month of rain and floods have seriously affected the railroads as well as the merchants. The country roads have been so bad that very little could be drawn to the stations, but now lumber will come in heavy shipments, and if present promises are carried out, there will be demand for all of it. There hardly ever was a time when there was so much money in the hands of common people, tout le monde, laborers and clerks, ready to be put into houses and homes.

A good building year is what the Hardware trade wants to experience, and with cheap money and material their hopes ought to be realized.

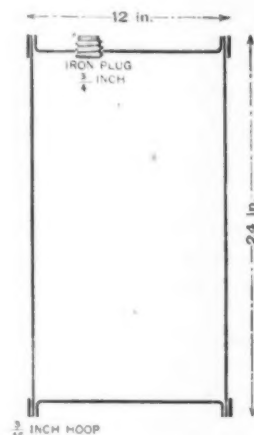
A good wheat crop is promised. General crop prospects are fair; general demand in trade is normal, and yet there is some overshadowing gloom felt in business circles that prevents any life or briskness in trade. The commercial agencies report fewer failures than last year, week by week, and yet that something (can it be termed malaria?) that spook or shadow, still depresses and weakens values. Overproduction is pointed to as the great cause of evil—but is overproduction the cause or is it the effect? Unquestionably, there is more Pig Iron produced than is consumed at present, but is there more produced than should be used under normal conditions? If so, then overproduction is the cause; if not, then it is only the effect of some other cause. Again, take Wire Nails; there are many more turned out weekly than ever before; but with all the big Cut Nail mills of the Wheeling district silenced, are more Nails made to-day than should be readily taken up by the trade? Unquestionably not. Yet the effect on their prices is sadly patent. One prominent Wire mill in the West writes that no mill is now getting a new dollar for an old one. And yet who believes that bottom has been reached? Who among the several staple lines of manufacture will

boldly do, as the boys bathing in a pond, dive down and bring up bottom in their hands; in other words, say, So far and no farther?

By the continued cutting and shading in prices the manufacturers are badly demoralized, the jobbers disheartened, the retailers discouraged, and who is benefited? Some say, the supreme law, the law of supply and demand, will right all inequalities, but can't some shrewd lawyer get the case advanced on the docket? or shall we do as Kentucky has done, get a new constitution?

### Suggestions for an Oil Can.

A CORRESPONDENT from Mexico, who has previously called attention to the difficulties encountered in packing goods for shipment on mule-back to the mountains, calls attention to the serious loss to miners of oils of all kinds in shipping. This is more particularly the case with coal oil, while the loss in lubricating oils is not so great, but still large enough to cause serious loss and inconvenience. He goes



Suggestions for an Oil Can.

on to state that when coal oil is shipped in the ordinary packages—that is, two five-gallon cans of light tin, packed in a wooden case—it very often happens that as much as 50 per cent. of the oil is lost, and 25 per cent. loss is not extraordinary. On thicker oils, such as lubricating, the losses are not generally as large as this, but yet are always very serious. A number of mining companies have had 10-gallon cans of galvanized iron made, which are shipped with oil and returned when empty for re-shipping. But all have experienced great difficulty in securing a can which would resist the ill-usage of the muleteers for more than two or three trips. Either the material of which they were made was so light as to soon be pierced by sharp stone or else the soldering of the top and bottom would give way and cause leakage. Ordinarily the ends are riveted to the sides of the can and then soldered, making a joint which will do excellently well until the edges are bent and battered, when they never fail to leak.

He suggests that a can to be strong enough to stand the rough usage might be made as shown in the accompanying illustration with good results, in the following manner:

The body of the can to be made of No. 18 galvanized iron, the seam to be fast-

ened with a double row of rivets and thoroughly soldered. Height to be about 24 inches, with a diameter of 12 inches. The top and bottom to be of same material, provided with a flaring edge not less than 1/4 inch wide, thus giving a wide bearing against the sides of the drum. These disks are to be pressed tightly into the cylinder, edge outward. Then a hoop of 3/16-inch iron is to be shrunk on the ends of the can, serving the double purpose of fastening the ends and of a protection to the whole. These hoops to be not less than 1 1/4 inches wide. The top is to be provided with an iron plug and screw top, with a 1/2-inch opening; the top of the cap to be lower than the edges of the can.

The ability to secure a serviceable can for this purpose is of considerable moment to those who are dependent upon muleteers for transportation, and any suggestions as to the construction of such a can will be appreciated by our correspondent.

### Trade Items.

CLARENCE TEBBETS succeeds H. P. Hyde, who retires on account of poor health, as treasurer of Waltham Emery Wheel Company, Waltham, Mass. Mr. Tebbets has had many years of business experience and is otherwise well qualified for the position. The new and enlarged facilities of the concern are fully employed on their standard line of Emery Wheels.

THE EMPIRE PORTABLE FORGE COMPANY, Lansingburg, N. Y., have opened a New York office with W. H. Quinn & Co., 103 Chambers street, who will conduct the sale of their productions, including the Empire, Western and Universal Forges, Empire Sash Pulleys, Yankee Ice Picks, George Washington Hatchets, Daubers, Razor Stropps, Curley's Self-Pulling Cork Screws and other Hardware specialties. The agents will carry a stock of these goods for the convenience of the New York jobbing and export trade.

BUEHLER, BONBRIGHT & Co., Philadelphia, are making some improvements in their store building at 427 Market street and 418 Commerce street, which they have occupied since 1857. The improvements consist of a fifth floor over the entire structure, 225 feet deep, and the application of electric power to their elevator. An entire new front will be put in on Market street, the design showing as little iron and as much glass as possible. During the alterations business is going on in the regular way, and although some inconvenience is suffered from the noise and dirt, there is no interruption in the filling of orders. The company advise us that when the improvements described are finished they will have as complete a jobbing Hardware house as any in Philadelphia, with five floors and basement 225 feet long, besides which they occupy as a warehouse a building in the rear, of four floors with a depth of 100 feet each.

GEORGE A. WEAVER, whose large Hardware and Agricultural Implement establishment at Newport, R. I., was destroyed by fire a few weeks ago, has awarded the contract for a new building, which, it is hoped, will be ready for occupancy by the first or middle of August. The entire lot on Broadway, Stone and Spring streets will be occupied by the proposed building, which will be four stories high, the first of brick and the remaining three of wood. The structure will be somewhat irregular in shape, 70 feet on Broadway and 83 feet on Stone street. The building will have little ornamentation, the first two stories on the Broadway front being mostly of glass supported by iron pillars. The ground floor will be without partitions, giving an



open space 15 feet in height, and making what will probably be the largest and most commodious store in Newport. This floor will have the fine Hardware and Cutlery department on the south, the seed department on the north, Paints and Oils in the northeast corner, with an office near the east side facing the main entrance. The stairway to the upper floors will be near the center of the building. A freight elevator running two stories will be located in the southeast corner. In the second story, which will be one large room, with the exception of a ladies' waiting room and private office near the east side, the heavier stock will be kept, including Agricultural Implements and Machinery, &c. The repair shop will occupy the easterly portion of the third floor, power being obtained from an electric motor. The front of this floor will be devoted to the larger wares. The fourth floor will afford ample room for the storage of the large assortment of wares which will be kept in stock. The four floors will be respectively 15, 12, 10 and 9 feet in height, and the cellar will be 8 feet in the clear. The building will be thoroughly supported by iron trusses resting upon iron posts to give it further stability, and when completed will be admirably adapted to the large business which Mr. Weaver has established through his enterprise and energy.

IN HIS ADVERTISEMENT in this issue C. E. Hudson, Leominster, Mass., calls attention to his Garden Hose Mender, with illustrations which show its special features. The strength and low price of this Mender and the reliability with which it performs its work are points concerning it to which the manufacturer refers.

AMONG THE SPECIAL NOTICES in this issue is one in which a clean and well-selected stock of Hardware, Agricultural Implements, Wagons, &c., is offered for sale. It is stated that the business is an established and profitable one located in a Southern town of 4000 inhabitants, with good climate and excellent country surroundings. The death of one of the partners in the business is referred to as the reason for selling.

### How a Saw is Made.

THE BUSINESS of Richardson Bros., 16 to 27 River street, Newark, N. J., widely known as manufacturers of Saws, was established in 1860, and incorporated in July, 1890, with a capital of \$400,000, when George A. Halsey was elected president, S. S. Battin vice-president, Hamilton Disston treasurer and F. B. Earle secretary. It is stated that this is the second largest Saw factory in the United States, and employs at present about 150 hands. The employees are paid by the day, with the exception of six or seven, who are paid by the piece. The works cover 15 city lots, 25 x 100 feet each, and include four buildings four stories high, two buildings of three stories and three buildings one story high. A fully equipped machine shop is a prominent feature of the factory, where all the necessary repairing is done for the entire works.

Their production consists of Hand, Panel, Rip, Key Hole, Kitchen and Butchers' Saws; Plastering and Brick Trowels, Circular, Mill, Mulay, Drag, Pit, Cross-Cut and Wood Saws; also Turning Webs. These goods are made in a large variety of sizes and grades of finish, the best quality of steel, however, being used throughout. The steel is re-

ceived at the factory cut in shape and of the desired thickness for the kind of Saw for which it is designated, whether it be for Hand, Circular, Cross-Cut or other Saw. As showing the general operation of making Saws, it will be interesting to follow the course of the Hand Saw in the various stages of its manufacture. It will be borne in mind that other Saws are made in a similar manner, with the exception of handling and packing in the case of Circulars, Cross-Cuts, &c.

The sheet for a Hand Saw as received at the factory is large enough for two blades, and is cut diagonally through the center with squaring shears. The blade is then toothed by a machine having a punch-like movement, which is set to punch the desired number of teeth to the inch. Their capacity for toothing Hand Saw blades is 100 dozen a day. The blade is then taken to a furnace, where it is heated, and plunged into a fish-oil bath to harden it. The heat to which it is subjected depends upon the degree of hardness required. Upon being taken from the oil the blade is warped and as brittle as glass. It then goes into another furnace to be tempered, where at the same time it is submitted to a severe pressure to straighten the blade. The care given to tempering the blades accounts in a great measure for the popularity these goods have attained. The blade is then ground upon large broad stones. The blade is ground lengthwise, being held against the stone by a gauge so set as to grind it thinner on the back than at the teeth. It is then polished by being held against a rapidly revolving wheel covered with sea-lion leather. The blade is next smithed, to make it level, or, as it is technically termed, to take out the buckle. In this operation the blade is laid on a large anvil and struck by hand with a hammer. This is one of the most particular as well as the most interesting operations through which the blade passes, and it requires long practice to become proficient as a smith. A smithing machine is in use, somewhat resembling a trip hammer, but it does not do the work in as satisfactory a manner as it is done by hand, and is only used on the cheaper grade of goods.

The blade is then etched. This may be done in either of two ways. For the best goods the design to be etched is first printed on paper from a steel plate with specially prepared ink. The design is then transferred from the paper to the blade, leaving the design surrounded by a wide border of ink. Acid is then put upon the uncovered portion of the design and allowed to eat into the steel the required depth, but care is needed in this operation, as the acid would eat through the blade if allowed to remain on it long. The other plan is to print the design on the blade with a rubber stamp and subject it to acid. The former plan is pursued in etching the finest finished goods.

The teeth are now filed, or, in other words, the Saw is sharpened, and the bead on the back of the point of the Saw are both done by hand, after which the teeth are set on an anvil with a hammer, by

hand. The blade is now ready for the handle. The handles are bought in the white and varnished, French polished and engraved at the factory. It is interesting to note the addition of a fifth rivet in the handle, introduced by this company, which they claim makes the handle especially strong where other handles sometimes break. With the highest priced goods the Saw, after being handled, is subjected to the operation of being blocked, to take out any buckle caused by screwing on the handle. The Saw is now ready for packing.

Power is furnished for the entire plant by a 150 horse-power engine in connection with two large tubular boilers. The factory has a capacity of \$250,000 worth of Saws a year, which find a market throughout North and South America, Canada, and in many foreign countries. The company have recently commenced manufacturing Files, this work, however, being carried on outside the Saw works.

### House-Furnishing Goods Carried by Retail Stores.

Wood & Beaumont Stove and Furniture Company, Atlanta, Ga., send to *The Metal Worker* the following list of articles kept in stock by house-furnishing goods stores:

Apple Corers.	Crimping Machines.
Ash Pans.	Cups.
Alcohol Stoves.	Cuspidors.
Alcohol Flasks.	Cradles.
Alarm Clocks.	Cash Boxes.
Ash Sifters.	Cake Cutters.
Ash Cans.	Cake Boxes.
Bath Brick.	Cake Molds.
Bowls.	Can Openers.
Blacking.	Candlesticks.
Butter Crocks.	Carving Sets.
Broom Holders.	Carpet Tacks.
Butter Molds.	Casters.
Baby Rattlers.	Chamber Pails.
Bread Trays.	Chamber Toilet Sets.
Bread Knives.	Cherry Stoners.
Butcher Knives.	Chopping Trays.
Basins.	Clothes Wringers.
Bells.	Coal Shovels.
Bird Cages.	Coal Hods.
Biscuit Cutters.	Coffee Canisters.
Boilers.	Cooking Stoves.
Bread Boxes.	Cooking Ranges.
Bread Pans.	Churns.
Broilers.	Coolers, 2 gallon.
Brooms.	Churn Dashers.
Buckets.	Cocoa Dippers.
Butter Dishes.	Chandelier Hooks.
Baby Carriages.	Coal Vases.
Baby Tenders.	Coal Tongs.
Blowers.	Call Bells.
Boys' Wagons.	Cement.
Basting Spoons.	Cheese Cases.
Bond Boxes.	Clocks.
Barrel Covers.	Children's Table
Breeding Cages.	Trays.
Bread Boards.	Coal-Oil Cans.
Bull's Eye Lanterns.	Coal-Oil Stoves.
Blacking Sets.	Corn-Cake Pans.
Bamboo Easels.	Chair Ladders.
Bathtubs.	Cutting Tables.
Blacking Brushes.	Crumb Brushes.
Blacking Daubers.	Dippers.
Bread Plates.	Dusters.
Butter Paddles.	Dust Pans.
Butter Prints.	Deed Boxes.
Butter Jars.	Dinner Buckets.
Berlin Kettles.	Dish Cloths.
Britannia Dippers.	Dish Pans.
Cedar Buckets.	Dish Mops.
Cedar Tubs.	Dish Covers, Wire.
Ceiling Brooms.	Doughnut Cutters.
Cooking Crocks.	Dripping Pans.
Clothes Horses.	Dredge Boxes.
Clothes Hampers.	Dust Brushes.
Clothes Lines.	Door Springs.
Cotton Mops.	Drip Coffee Pots.
Corn Poppers.	Door Mats.
Clothes Pins.	Enameled Sauce Pans.
Crumb Pans.	Enameled Preserving
Counter Brushes.	Kettles.
Coal Sieves.	Egg Beaters.
Coffee Pots.	Enameled Grates.
Cork Screws.	Egg Poachers.
Colanders.	Easels.

Egg Steamers.  
Emery Steels.  
Feather Dusters.  
Faucets.  
Fire Sets.  
Flat Irons.  
Flour Cans.  
Flour Sieves.  
Flower-Pot Brackets.  
Flower-Pot Stands.  
Flue Stoppers.  
Fluters.  
Fly Traps.  
Fly Fans.  
Foot Baths.  
Fork Boxes.  
Fruit Jars.  
Fruit Presses.  
Frying Pans.  
Funnels.  
Flower Baskets.  
Fiber Ware.  
Flour Scoops.  
Foot Mats, wire.  
French Sauce Pans.  
Floor Mops.  
Folding Tables.  
Frying Baskets.  
French Cook Knives.  
Furniture Polish.  
Furniture Brushes.  
Fluting Machines.  
Granite Iron Ware.  
Glass Oil Cans.  
Grate Polish.  
Gem Pans.  
Gas Fixtures.  
Gas Globes.  
Grates.  
Gas Stove Broilers.  
Grate Hoods.  
Gauze Door Ranges.  
Grate Screens.  
Galvanized Coal Hods.  
Globe Holders.  
Gas Lighters.  
Glue.  
Glass Cutters.  
Graters.  
Grate Blowers.  
Gas Stoves.  
Gas Torches.  
Gas Tapers.  
Gas Shades.  
Gas-Stove Ovens.  
Gravy Strainers.  
Gas Keys.  
Gridirons.  
Hearth Brooms.  
Hat Racks.  
Hatchets.  
Hip Baths.  
Heating Stoves.  
Henniss' Potato Mashers.  
Henniss' Broilers.  
Hunter's Sifters.  
Horse Radish Graters.  
Ham Slicers.  
Hammers.  
Ham Broilers.  
Ice Picks.  
Ice Cream Freezers.  
Ironing Boards.  
Ice Chests.  
Ivory Handle Knives.  
Ice Shavers.  
Ice Chippers.  
Ice Tonge.  
Iron Heaters.  
Jelly Molds.  
Jelly-Cake Plates.  
Jars.  
Japanned Tea Trays.  
Japanese Tea Trays.  
Jelly-Roll Pans.  
Knife Boxes.  
Knives and Forks.  
Kerosene Cans.  
Kettles.  
Kitchen Spoons.  
Knife Sharpeners.  
Kraut Cutters.  
Keystone Egg Beaters.  
Key Rings.  
Kitchen Tables.  
Keelers.  
Knife Cleaners.  
Lap Boards.  
Lamp Burners.  
Lamp Chimneys.  
Looking Glasses.  
Lamp Wick.  
Lamp Shades.  
Ladders, step.  
Ladles.  
Lady Finger Molds.  
Lamps.  
Lanterns.  
Laundry Irons.  
Lemon Squeezers.  
Lunch Boxes.  
Lantern Globes.  
Lard Cans.  
Lemonade Shakers.

Liquor Mixers.  
Lawn Settees.  
Lawn Chairs.  
Liquid Glue.  
Mustard Spoons.  
Mouse Traps.  
Match Safes.  
Meat Cutters.  
Meat Stuffers.  
Milk Cans.  
Milk Pails.  
Milk Pans.  
Milk Strainers.  
Mincing Knives.  
Molds.  
Mops.  
Muffin Pans.  
Muffin Rings.  
Marking Pots.  
Mop Handles.  
Moon Shades.  
Machine Oil Cans.  
Measure Cups.  
Meat Forks.  
Milk Boilers.  
Milk Skimmers.  
Muffin Cups.  
Meat Pounders.  
Meat Knives.  
Mica.  
Mugs.  
Macaroni Dishes.  
Nutmeg Graters.  
Nurse Lamps.  
Nut Cracks.  
Nut Picks.  
Nursery Refrigerators.  
Nickel-Plated Cuspidors.  
Never-Break Fry Pans.  
Never-Break Grid-dles.  
Oak Buckets.  
Oak Tubs.  
Office Baskets.  
Oil Cans.  
Oilers.  
Oyster Plates.  
Oil Tanks.  
Oil Pumps.  
Oyster Fryers.  
Oil Stoves.  
Oil-Stove Wick.  
Oil Paintings.  
Parlor Brooms.  
Paper Dusters.  
Pails, covered.  
Pails, flaring.  
Pot Cleaners.  
Pot Covers.  
Pots.  
Pounders, steak.  
Preserving Kettles.  
Presses, fruit.  
Presses, vegetable.  
Pictures.  
Potato Fryers.  
Pipe Collars.  
Putz Pomade.  
Pepper Boxes.  
Pocket Cook Stoves.  
Pudding Dishes.  
Potato Slicers.  
Potato Graters.  
Potato Peelers.  
Paring Knives.  
Plated Knives.  
Plated Forks.  
Plated Teaspoons.  
Plated Tablespoons.  
Pocket Scissors.  
Pillow-Sham Holders.  
Porcelain Sauce Pans.  
Porcelain Kettles.  
Pails, strainer.  
Pastry Boards.  
Patty Pans.  
Picture Wire.  
Picture Nails.  
Pie Knives.  
Pie Plates.  
Pinking Irons.  
Pudding Pans.  
Plate Lifters.  
Polishing Irons.  
Potato Parers.  
Potato Mashers.  
Quilting-Frame Brackets.  
Radish Graters.  
Rat Traps.  
Refrigerators, Jewett's.  
Rice Boilers.  
Rings, muffin.  
Roasters, turkey.  
Rolling Pins.  
Rubber Mops.  
Ranges, Gauze Door.  
Ranges, family.  
Ranges, hotel.  
Ranges, cast iron.  
Ranges, wrought steel.

Rogers' Knives.  
Rogers' Forks.  
Rogers' Spoons.  
Rogers' Sugar Shells.  
Rogers' Butter Knives.  
Scrub Brushes.  
Stove Brushes.  
Stove Polish.  
Stoves, cast.  
Stoves, cooking.  
Stoves, oil.  
Stoves, gas.  
Stoves, coal.  
Stoves, coke.  
Stoves, wood.  
Stoves, laundry.  
Stoves, vapor.  
Stoves, combination.  
Stoves, alcohol.  
Stoves, Gauze Door.  
Stoves, hotel.  
Salt Boxes.  
Sifters.  
Sieves.  
Sash Fasteners.  
Stove Repairs.  
Stove Linings.  
Stove Shovels.  
Stove Pokers.  
Stoveware.  
Stove Scrapers.  
Stove Lifters.  
Squirrel Cages.  
Strainers.  
Stone Jars.  
Screens, grate.  
Silver Polish.  
Soldier.  
Silver-Plated Ware.  
Sad Irons.  
Sad-Iron Stands.  
Salt Cellars.  
Salt Spoons.  
Salt Sprinklers.  
Sash Brushes.  
Sauce Pans.  
Sauce Boilers.  
Saws, meat.  
Scales, family.  
Scoops, family.  
Scoops, grocers'.  
Scrubbers.  
Screws, picture.  
Shears.  
Scissors.  
Sifters, ash.  
Sifters, flour.  
Skimmers.  
Saw Cutters.  
Sitz Baths.  
Slop Jars.  
Soap Dishes.  
Soup Ladles.  
Spiders.  
Spice Boxes.  
Spice Cabinets.  
Spoons, iron.  
Spoons, tin.  
Spoons, wood.  
Spoons, silver.  
Spoon Holders.  
Spring Balances.  
Steak Pounders.  
Steamers.  
Steam Cookers.  
Stew Pans.  
Stove Boards.  
Stove Pipe.  
Stove Elbows.  
Stove-Pipe Shelves.  
Stove-Pipe Dampers.  
Sugar Boxes.  
Sponge-Cake Pans.  
Salad Spoons.  
Salad Forks.  
Saratoga Chippers.  
Sugar Sifters.

Sardine Knives.  
Sausage Cutters.  
Sausage Stuffers.  
Screw Drivers.  
Steel Door Mats.  
Stove-Lid Lifters.  
Steel Coal Grabs.  
Stove Pans.  
Tumbler Brushes.  
Towel Rollers.  
Tablespoons.  
Teaspoons.  
Tea Bells.  
Tea Trays.  
Tea Strainers.  
Tea Balls.  
Tea Canisters.  
Tea Kettles.  
Tea Pots, Rebecca.  
Tea Pots, granite.  
Tea Pots, agate.  
Tea Pots, tin.  
Tea Pot Stands.  
Tea Steepers.  
Tin Cups.  
Tin Plates.  
Tin Buckets.  
Tin Saucepans.  
Tin Dippers.  
Tin Coffee Pots.  
Tin Pans.  
Tin Cans.  
Tin Boxes.  
Tinware.  
Toasters.  
Tin Water Sets.  
Toy Banks.  
Tricycles.  
Tin Horns.  
Toilet Sets.  
Tube Cake Pans.  
Turkey Roasters.  
Towel Arms.  
Toast Forks.  
Tea Scales.  
Turkey Dusters.  
Trivets.  
Velocipedes.  
Velocipede Bells.  
Vegetable Cutters.  
Vegetable Slicers.  
Vegetable Graters.  
Vegetable Strainers.  
Vegetable Baskets.  
Washboards.  
Washtubs.  
Whisk Brooms.  
Whitewash Brushes.  
Window Brushes.  
Window Cleaners.  
Wood Dusters.  
Wood Spoons.  
Wood Trays.  
Wood Bowls.  
Wagons.  
Wire Broilers.  
Waffle Irons.  
Wafer Irons.  
Waiters.  
Wash Basins.  
Wash Boilers.  
Water Coolers.  
Wick for Oil Stoves.  
Wire Dish Cloths.  
Wire Baskets.  
Wire Mats.  
Waste Baskets.  
Wood Scoops.  
Wood Measures.  
Wire Fenders.  
Window Fasteners.  
Well Buckets, oak.  
Well Buckets, galvanized.  
Wall Brooms.  
Washstands.  
Water Buckets.  
Zinc.

Push Plates, &c. The company also issue a price current for summer of 1892 of seasonable Hardware Specialties. Illustrations are given of Refrigerators, Lawn Mowers, Freezers, Spring Hinges, Wringers, &c.

W. S. BROWN, Pittsburgh, Pa.: Fishing Tackle, Lawn Tennis and Cricket goods. Catalogues describe and illustrate Rod Mounting Reels, Flies, Spoons, Fly Hooks, Bait Boxes, Baskets, Netting, Rackets, Tennis Balls, Cricket Bats, Balls, Wickets, &c.

BUHL, SONS & Co., Detroit, Mich.: Price current for May. Illustrations and prices are given of Mechanics' Tools, Window and Door Screens, Lawn Mowers, Freezers, Cherry Stoners, Well Points, Dog Collars, Guns and other seasonable goods.

FULTON WIRE WORKS, Wooley & Co., 61 Fulton street New York.: Iron and Brass Wire Work, plain and ornamental, painted, gold, silver and copper bronzed, oxidized, electro-plated and Japanese finishes. Brass, Copper, and Iron Wire Cloth of every description; Window Screens, Nursery Guards, Nursery Fenders and Spark Guards, Sieves, Riddles, Coal and Sand Screens.

A. TREDWAY & SONS HDW Co., Dubuque, Ia.: Midsummer Hardware price current. Illustrations and prices of seasonable goods are given, and attention is directed to their Wizard brand of Tools. It is stated that the Wizard special brand of Hand Tools are manufactured for them only, by manufacturers renowned for the superiority of their product, and that any article with their brand Wizard will be found of superior finish, unexcelled quality and most desirable pattern known to the line.

CHARLES F. ORVIS, Manchester, Vt.: Rods, Reels, Flies, &c. An artistically bound catalogue, attractively arranged gives illustrations of Rods, Rod Holders, Fly Books, Tackle Cases, Hooks, Reels, Artificial Insects, Minnows, Trolling Baits, Sinkers, Tents, Camping Stoves, Pants and Leggings, &c. It is a book to gladden the heart of the fisherman.

ADRIANCE, PLATT & Co., Poughkeepsie and 165 Greenwich street, New York. Adriance Harvesting Machine, New Adriance Buckeye Mower, Style H; Extra parts of Adriance Buckeye and Adriance Mowers and Reapers, and Telegraph code for the Adriance Rear Discharge Binder.

MACK & Co., Rochester, N.Y.: D. R. Barton Nursery Tools and Carving Tools. It is stated that this is the first list of Nursery Tools exclusively that they have issued, although with few exceptions the goods appear in their general catalogue. It is only recently that they have made a complete line of Carving Tools, of which line illustrations and prices are given in the catalogue devoted to these goods.

STANDARD AXE AND TOOL WORKS, Ridgeway, Pa.: High-Grade Axes, Hand Axes with handles, Broad Axes, Second-Grade Axes, Keystone brand of Axes, Boys' Axes, Carpenters' Adzes, Bark Spuds, Mining Picks and Machine Knives.

THOMAS MORTON, 63-65 Elizabeth street, New York.: Morton's Copper and Steel Sash Chains and patent attachments; also Chains for suspending Doors, Gates; Cog Wheel Chains, Bell and Steamboat Chains, &c.

SHELTON COMPANY, Birmingham, Conn.: Supplements A and B to catalogue of November, 1891, establishing new list prices on Shoe Finders' Goods. Discount sheet No. 79, to apply to catalogue of 1891, accompanies the supplements.

C. W. LE COUNT, South Norwalk, Conn.: Machinists' Tools. Clamp Dogs, Boiler Clamps, Standard Wrenches, Bolt Dogs, Saw Mandrels, Vise Clamps, Bridge Clamps, and Le Count's Patent Cribbage Board.

## Price-Lists, Circulars, &c.

**T**HATHAM & BROTHERS, New York, have prepared a metallic end hanger illustrating the diameter and thickness of lead pipe from  $\frac{3}{8}$ -inch, 7 ounces to the foot, to 2-inch,  $11\frac{3}{4}$  pounds to the foot. They also furnish pipe  $2\frac{1}{2}$ , 3,  $3\frac{1}{2}$ , 4,  $4\frac{1}{2}$ , 5 and 6 inches, as per weight list.

MARYLAND MFG. COMPANY, Baltimore, Md.: Sheet giving the revised tariff, November 17, 1887, on Black and Tinned Norway Iron Rivets and Burrs.

LEE-CLARK-ANDRESEN HARDWARE COMPANY, Omaha, Neb.: Illustrated catalogue of Builders' Hardware. This book of 84 pages illustrates an extensive line of Builders' Hardware in genuine bronze metal and in bronze-plated iron, in various finishes. It also includes Rim and Mortise Locks in iron and wrought steel, Butts, Door Bolts,



### Remittance Blanks.

THE REMITTANCE BLANKS herewith given have been received from those engaged in different branches of the Hardware business, and for that reason are

sary to extend their lines of patterns in this department. The reason for this is, that modern ideas, when applied to interior decoration, demanded that vacant corners be filled with small cabinets; that the carved mantels shall show more or less metal, and that hinge strap and escutcheon

the different thickness of wood, by having different length of nose or escutcheon, while in the case of a bit key lock, many of which are used, the key shanks vary in length to suit the different woods. Hinge straps for cabinet trimming differ from hinge straps for an ordinary door, from the fact that the plate joins the butt plate at the knuckle, instead of uniting the edge of the butt leaf, as in the case of the ordinary door.

At this point it may be well to explain a technical point regarding

HAND AND BEVEL.

a stumbling block to all but the initiated — *i. e.*, the hand of a door is determined by the way it opens, and all doors are supposed to open in except closet or cupboard doors; hence a room door opening out is reverse bevel, while a closet door opening out is not reverse bevel, but regular. It is a common occurrence for a customer, in ordering locks for a closet or cupboard, to air his knowledge of hand and bevel as applied to an ordinary door, and tangle himself up in the order for cupboard or closet locks. There is such a thing as a closet door opening in.

## THE BEST RULE

in such a case is to make a small drawing. It need not be elaborate; in fact, the closet may be designated as a box and the door a straight line, meeting "the box" at either one side or the other. This will be more explicit than all the written descriptions possible, and it is more than likely that much delay and expense will be saved. The matter of bevel does not apply when the improved lock is used in the shape of a dead bolt. By this is meant a lock in which the bolt is so arranged that it throws to both sides of the case. For cupboard trimming a spring bolt is most

*Enclosed please find*

*Draft No.* \_\_\_\_\_ *for \$* \_\_\_\_\_

“ “ ” ”

\_\_\_\_\_

" " "

§

Total, \$

*in payment of the following bills.*

*Resp'y.*

GEO. A. SCHUSSLER.

[illegible]

Fig. 1.—Remittance Blank of Geo. A. Schussler.

of special interest. The form in Fig. 1 is used by Geo. A. Schussler, Monmouth, Ill., and is printed in copying ink, so as to leave a perfect copy in letter book. McLean Bros. & Rigg, 52 and 54 New street, New York, are using the one shown in Fig. 2, which possesses some interesting features. Another one comes from R. H. Balding, Paola, Kan., Fig. 3, printed in copying ink, which has been found satisfactory and complete by him. Fig. 4 is the form of blank received from Jesse Lee & Sons, Philadelphia, Pa. They remark in this connection that it is preferable to have the printed matter on memorandums or short letter heads to the right of the center. Most memorandums have the space at the right, which is awkward. From H. N. Gray, Cambridge, Vt., comes the form as shown in Fig. 5. This arrangement indicates which discount is for each invoice. It will be noticed that bills are sent with remittance to be accepted.

### Cabinet Trimming.

BY W. W. B.

**T**HIS PARTICULAR BRANCH of Hardware has been more closely allied to art at all times than any other department of metal trimming. The coffers and caskets of the ancients were often elaborately ornamented with metal in various designs, the metal itself was costly, gold and silver being extensively applied and in such profusion as to almost entirely cover the wood, if wood were used, in designs both beautiful and intricate. While the use of gold and silver for trimming cannot properly be classed under the head of Hardware, still when used on the larger-sized cabinets, caskets, &c., it leaves the jewelers' trade and becomes a feature of Hardware.

## CABINET TRIMMING

of to-day is a large and important branch of the Hardware business and more progressive manufacturers have found it neces-

plates shall appear on all small doors. The result has been that each of the leading firms in artistic metal production carries an extensive line of locks, hinge plates, escutcheon plates and drawer

Herewith please find Cheque for

\$ \_\_\_\_\_, covering account as shown below.

MO.	MSE.	DR.	CR.
	Cash Disc't,		
	Freight,		
	Cartage,		
	Cheque,		

*Kindly pass the same to our credit, acknowledge,*

*and oblige,*

*Faithfully yours,*

McLEAN BROS. & RIGG, L't'd.

*Acct't.*

Fig. 2.—Remittance Blank of McLean Bros. & Rigg.

pulls of various designs; in fact, it may be said that all the

## LEADING SCHOOLS

of architecture appear in this line of trimming, as well as in the other branches of Hardware trim. Locks are made to fit

favored, as the door on which it is applied will lock without key. In this case the necessity arises for hand, &c.

## DRAWER LOCKS

are distinctive, from the fact that all drawers are more or less elaborate as re-





having also subscribed a few thousand dollars. Having thus interested the latter, they are naturally hoping to secure a good portion of their trade. The officers of the new company are W. W. Dickinson, president; Thomas J. Darragh, vice-president; Geo. Reichardt, second vice-president; Jno. W. Dickinson, Jr., secretary and treasurer, and L. O. Knox, manager. The directors are the following: Jno. E. Geyer, Phil. Pfeifer, Jno. H. Martin, J. A. Woodson, W. H. Halliburton, Charles F. Fowler and Jno. M. Rose.

### It Is Reported—

That J. Frank Boyer, Norristown, Pa., is disposing of his stock of Stoves, Hardware, Cutlery, &c., preparatory to closing out business and engaging exclusively in plumbing and gas and steam fitting.

That J. M. Thomas has sold his interest in the Hardware and grocery business of the Lyon Company, St. Augustine, Fla., to O. B. Smith.

That G. E. Bliss of Toledo has purchased an interest in the Sprinkle-Franks Hardware Company, Kendallville, Ind., and assumed the management of the tin and plumbing department.

That the Tenk Hardware Company, Quincy, Ill., have purchased property on Jersey street on which they will build a large warehouse.

That the Grissman Hardware stock at Alpena, Mich., has been closed out to Mr. Luther.

That the Hardware store and stock of Welterstorff, Haskell & Co., St. Paul, Minn., were partially destroyed on the 15th inst.

That Goodman Benedict of Wallace, Kan., will open a Hardware store at Elvira, Col., in a few months.

That R. A. Hollenberg's new Hardware store at Irving, Kan., is nearing completion.

That E. H. Fiscus will open a new Hardware store at West Washington, Pa.

That Salem J. Wolf, Hollidayburg, Pa., has sold his Hardware store and will connect himself with an Altoona firm.

That fire at Jackson, Miss., on the 14th inst. destroyed the store of E. J. Davis & Co., dealers in Hardware and Drugs. The stock was valued at \$10,000, on which there is an insurance of \$7000. The Hardware store of T. McLelland was also damaged to the extent of \$1000, fully covered by insurance.

That P. B. Updike has sold his interest in the Updike-Cratty Hardware Company, Litchfield, Ill., to Lewis and Charles Chance. Mr. Updike will retire from mercantile life.

That Mr. Andrews has opened a Hardware store at Bessemer, Col.

That J. M. Petty, Washington, N. J., has opened his new Hardware store.

That J. J. Disoway has retired from the Hardware firm of J. C. Whitty & Co., Newberne, N. C., and formed a partnership with B. L. Churchill, under the firm name of Disoway & Churchill.

That the Hardware firm of Delancy & Snyder, Bucyrus, Ohio, has been dissolved, Mr. Delancy retiring. The style of the new firm is J. Snyder & Co.

That F. Meyer, Bro. & Co. have been incorporated at Peoria, Ill. They will handle general Hardware. The capital stock is \$40,000.

That the Hardware business conducted by F. W. Sturtevant at Montevideo, Minn., has been sold to M. O. Champlin and John P. Iceland, who will continue it.

That J. H. Klosheim's Hardware store at Cicero, N. Y., was robbed on the 15th inst. About \$50 worth of goods was secured.

That the Morrill Hardware Company, Aspen, Col., have filed a certificate that their capital stock has been paid up in full.

That W. E. Noble, dealer in Hardware, Benton Harbor, Mich., has sold his stock to J. W. Owen, Clarence, Iowa.

That Gus Perkel and John Smith will open a Hardware store at McKeesport, Pa., in a few days.

That George Hill has purchased a Hardware store at Orange, Mass.

That J. W. Smith has sold his Hardware store at La Crosse, Wis., to E. C. Young.

That Tillotson & Hulet have bought the entire stock of Hardware of G. A. Clark, Earlville, N. Y., Mr. Clark having engaged in the manufacturing business at Sidney, his former home.

That J. B. Gillett & Co.'s Hardware store at Le Roy, N. Y., was damaged by fire several weeks since.

That Coffin Bros. will open a new Hardware store at Winfield, Kan.

That Fred. Young, Cypress River, Man., is erecting a two story building in which he will open a Hardware and Furniture store.

That H. P. Anderson has opened a Hardware and Tinware store at Peapack, N. J.

That Krause & Darling's Hardware store at Sheboygan, Wis., was entered by burglars on the 6th inst. A large stock of Cutlery was carried away.

That E. P. Rankin and Samuel Chambers have formed a partnership at Brookville, Pa., and will open a Hardware store.

That H. S. Eaton has purchased the interest of Frank G. Stevens in the Duluth Hardware Company, Duluth, Minn. Mr. Eaton thus secures the controlling interest.

That John Fuller, Corrina, Maine, has sold his stock of Hardware to John Gray of Newport.

That William Martin and Charles Hill have purchased a Hardware store at Lexington, Mo.

That the Hardware store occupied for so many years by Schule & Muhling, Detroit, Mich., has been purchased by Joseph Jacobs for \$10,000.

That L. W. Meining & Co.'s Hardware store at Duluth, Minn., was entered by burglars on the 10th inst. and \$600 worth of Cutlery and other goods stolen.

That F. B. Collins has purchased the stock of Hardware formerly owned by Reinhart & Bro.

That the Warner Hardware Company, Jackson, Mich., are about to erect a three-story addition.

That H. L. Arringdale has moved his Hardware stock to a new store in Radford, Va.

That H. V. G. White of Downsville, N. Y., will open a Hardware store at East Branch, June 1.

That the Hardware store of D. D. Gregory, Syracuse, N. Y., narrowly escaped destruction by fire on the 8th inst. A considerable loss was suffered through smoke and water.

That A. D. Searles has bought the interest of his brother in the Hardware business at Lime Spring, Iowa.

That J. W. Hanrick has sold his Hardware store at Danville, Ind., to W. F. Sandy.

That the business of the Hardware firm of M. B. Winegar & Sons, South Butler, N. Y., has been resumed.

That Hiram Hatch contemplates moving his Hardware store from Pierre, S. D., to Fort Pierre.

That A. A. Luby, Bethany, Ill., has sold his Hardware store to Charles Booze of Sullivan.

### Exports.

PER SHIP HONOLULU, MAY 13, 1892, FOR MELBOURNE, AUSTRALIA.

By Henry Diston & Sons.—3 cases Hardware, 15 cases Hardware.  
By Withington & Cooley Mfg. Company.—10 cases Rakes, &c., 1 case Whip Sockets.  
By Atlas Tack Corporation.—9 cases Nails.  
By Maitland, Phelps & Co.—1 box Hardware.  
By Edward Miller & Co.—2 packages Lamp Goods.  
By R. W. Forbes & Son.—1 case Oilers, 1 box Lamps, 3 cases Lawn Mowers, 4 cases Braces, 10 packages Tinware.  
By Alfred Field & Co.—4 cases Hardware, 1 case Springs, 1 case Washers and Nails, 1 case Tacks.  
By W. H. Crossman & Bro.—3 cases Hatchets, 2 cases Air Rifles, 1 case Lanterns, 7 cases Hardware, 2 cases Forks, 3 cases Hardware, 1 case Lanterns.  
By McLean Bros. & Rigg.—15 cases Hatchets, 11 cases Hardware, 2 cases Wood Scoops, 6 cases Saw Files, 4 cases Agate Ware, 25 cases Axes, 2 cases Hog Ringers, 5 cases Lampware, 5 packages Lampware, 12 cases Stocks and Dies, 1 case Freezers, 3 cases Hardware, 1 package Gauges, 1 case Bench Screws, 22 packages Dies, 3 cases Drills, 1 case Chain Wrenches, 103 cases Hoes, 2 cases Farming Tools, 1 case Screw Drivers, 1 case Nutmeg Graters, 1 case Slicers, 1 Gun, 4 cases Apple Parers.  
By Australasian-American Shipping Company.—3 cases Axes, 2 cases Nuts and Bolts, 4 cases Wringers, 500 cases Axes.  
By S. Hoffnung & Co.—5 cases Tinware, 1 case Rakes, Shovels, &c., 1 case Wringers, 1 case Carpet Sweepers, 1 case Shears, 1 case Fire Arms, 1 case Carpet Sweepers, 1 case Wire Goods, 1 case Rat Traps, 1 case Tinware, 3 cases Hardware, 1 case Tinware, 1 case Strops, 1 case Rifles.  
By Arkell & Douglas.—76 cases Axes, 4 cases Bolts, 1 case Sieves, 12 cases Sifters, 1 case Cordage, 6 crates Churns, 1 case Curry Combs, 4 cases Fiber Ware, 8 cases Wireware, 400 reels Barb Wire, 4 packages Barrows, 2 Bolt Clippers, 1 case Carpet Sweepers, 1 case Sandpaper, 1 bundle Rubber Packing, 3 cases Tinware, 1 case Stencils, 1 case Whipstocks, 88 cases Handles, 15 cases Forks, 120 cases Axes, 3 cases Hoes, 15 packages Lampware, 29 cases Choppers, 3 cases Pumps, 10 cases Wringers, 13 cases Mowers, 12 cases Scales, 14 cases Tools, 4 packages Hardware, 23 cases Nails, 1 crate Traps, 3 cases Bolts, 3 cases Axes, 7 cases Handles, 40 reels Barb Wire.

PER BARK H. J. LIBBY, MAY 14, 1892, FOR BRISBANE, QUEENSLAND.

By R. W. Forbes & Son.—12 packages Hardware, 23 packages Stoves, 9 cases Tinware, 5 cases Lampware, 2 cases Hammer, 33 boxes Axes, 3 cases Axes, 2 cases Fire Arms and Cartridges, 2 cases Handles.  
By H. W. Peabody & Co.—4 cases Freezers, 16 packages Farming Implements, 10 cases Hardware, 1 case Empty Shells, 1 case Primers, 2 cases Tools, 7 cases Hardware, 5 cases Axes.  
By Arkell & Douglas.—600 reels Barb Wire, 2 cases Plated Ware, 2 cases Traps, 1 case Rifles, 15 cases Choppers, 5 cases Forges, 1 case Pencils, 6 cases Sifters, 2 packages Sporting Goods, 1 bundle Rakes, 2 cases Forks, 7 cases Mowers, 30 packages Lampware, 6 cases Nails, 2 cases Wringers, 36 cases Handles, 82 cases Axes, 22 packages Hardware, 14 cases Tools.  
By F. & J. Meyer.—10 cases Hatchets, 1 case Hay Forks, 3 cases Axes, 1 case Padlocks.  
By Collins & Co.—67 Boxes Edge Tools.  
By Henry Diston & Sons.—5 cases Hardware.  
By Winchester Repeating Arms Company.—7 cases Cartridges, 1 case Primers.  
By the Fairbanks Company.—3 boxes Scales.  
By Arkell & Douglas.—1 case Saws.  
By S. Hoffnung & Co.—6 cases Choppers, 1 barrel Hardware, 3 cases Ammunition.

PER SHIP GRANITE STATE, MAY 16, 1892, FOR SYDNEY, N. S. W.

By W. & B. Douglas.—1 box Pumps.  
By Meriden Britannia Company.—10 boxes Coffin Fixtures.  
By Rogers, Smith & Co.—10 packages Silver Ware.  
By McLean Bros. & Rigg.—211 packages Harvesters and 24 cases Duplicates.  
By Healy & Earl.—4 cases Iron Pipe Fittings, 1 case Thermometers.

By William Lupton.—8 cases Wood Handles, 13 cases Axes, &c.  
 By Simpson, Hall, Miller & Co.—9 packages Silver Ware.  
 By Hussey, Binns & Co.—5 cases Shovels, Spades, &c.  
 By Winchester Repeating Arms Company.—1 case Tools, 3 cases Guns, 1 case Primers.  
 By McLean Bros. & Rigg.—241 packages Harvesters and Binders, 52 packages Plows.  
 By R. W. Forbes & Son.—18 cases Cork Pullers, 2 cases Hardware, 4 packages Plated Ware, 108 packages Agricultural Implements.  
 By F. B. Wheeler Company.—4 cases Saddlery Hardware, 24 Wringers.  
 By Strong & Frowbridge.—45 cases Axes, 10 cases Lawn Mowers, 5 cases Bolts, 4 crates Handles, 4 cases Wringers, 4 cases Emery Wheels, 2 cases Axle Clips, 2 cases Forks, 1 crate Handles, 1 case Hoes, 1 case Whip Sockets, 1 case Hammers, 1 case Locks, 1 case Braces, 41 cases Handles, 30 cases Axes, 3 cases Hatchets, 3 packages Hardware, 1 case Braces, 1 case Hammers, 1 case Tools, 1 case Saw Sets.  
 By Henry W. Peabody & Co.—1 case Bolts, 1 case Air Rifles, 2 cases Fire Arms, 4 cases Nails, 5 cases Hardware, 1 case Bolts, 3 packages Hardware, 5 packages Lawn Mowers, 3 cases Nails, 2 cases Sandpaper, 5 packages Hardware, 6 cases Wringers, 1 case Primers, 1 case Lamp Goods, 3 cases Guns, 8 cases Cartridges, 1 case Forks, 2 cases Hardware, 1 dozen Money Drawers, 1 case Edge Tools, 18 cases Handles, 3 cases Hardware, 6 crates Handles, 1 case Farming Implements, 5 packages Flint Paper.  
 By R. H. Dana & Co.—42 cases Tinware, 3 cases Picture Wire, 4 cases Shovels, 1 case Door Hinges, 3 packages Lawn Mowers, 1 case Drills, 1 case Springs.  
 By W. K. Freeman.—1 case Drills, 4 packages Hardware, 50 boxes Handled Axes, 6 cases Scales, 5 packages Hardware, 2 cases Rifles, 1 case Tools, 15 cases Cartridges, 14 cases Axes, 6 boxes Hardware.  
 By R. W. Cameron & Co.—9 cases Bird Cages, 2 boxes Hardware, 1 case Scales, 1 case Pulleys, 4 cases Blowers, 1 case Drills.  
 By Coombs, Crosby & Eddy Company.—4 cases Wire Cloth, 6 cases Clothes Wringers, 5 cases Wheelbarrows, 1 case Saws, 2 cases Axes, 2 cases Handles, 1 case Hammers, 1 case Hardware, 5 cases Axes, 1 case Shears, 1 case Lanterns, 1 case Fruit Jars, 43 cases Fruit Jars, 10 packages Lawn Mowers and 1 bundle Handles, 15 packages Lawn Mowers, 13 cases Nails, 2 cases Planes, &c., 1 case Saw Clamps, 2 dozen Bush Hooks.  
 By W. H. Crossman & Bro.—3 cases Plated Ware, 3 cases Lemon Squeezers, 22 cases Agricultural Implements, 12 crates Handles, 16 cases Hardware, 3 cases Iron Bolts, 1 case Loading Tools, 2 cases Carpet Sweepers, 1 barrel Cow Bells, 10 cases Bush Hooks, 21 cases Hardware, 17 cases Handles, 1 case Lanterns, 4 cases Handles, 40 cases Hardware, 4 cases Freezers, 2 cases Freezers, 23 crates Handles, 2 cases Primers, 5 cases Cartridges, 1 case Reloading Tools, 1 case Primed Shells, 1 case Guns, 45 cases Axes, 1 case Rakes, 8 boxes Hatchets 29 cases Axes, 1 case Fish Lines, 5 cases Axes, 23 packages Hardware, 3 packages Scales, 53 dozen Axes, 20 dozen Handles, 10 packages Lawn Mowers, 1 case Agricultural Implements, 1 case Plated Ware, 1 case Wrenches, 1 case Snaths, 2 cases Rifles, 1 case Tools, 5 cases Metallic Cartridges, 1 barrel Hoes, 15 packages Hardware, 20 cases Axes, 1 crate Handles 7 cases Rifles, 1 case Hoes, 14 cases Axes, 9 cases Cartridges and Primers, 17 cases Scales, 1 case Lanterns, 1 case Reloading Tools, 2 cases Drills, 19 crates Stoves, 36 packages Hardware.

FOR NEWCASTLE.

By W. H. Crossman & Bro.—10 packages Lawn Mowers, 3 cases Guns and Parts, 1 case Cartridges, 1 barrel Hoes, 1 case Shovels, 1 case Lanterns, 8 packages Hardware.  
 By H. W. Peabody & Co.—16 cases Edge Tools, 1 case Emery Wheels, 1 case Forks, 2 cases Handles, 4 packages Hardware.

## Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

The general report would indicate that business has been more satisfactory the past week than it was during the preceding fortnight. Jobbers generally noted a freer run of orders that embraced nearly

everything connected with house painting, and included various specialties also. Manufacturers' reports were more cheerful and such as would indicate that the outturn of goods is again of seasonable proportions, although hardly brisk enough to compensate for the uneven trade experienced during the greater part of the month. In values there has been scarcely any movement, and the general market shows steadiness as well as animation. Conditions in the various lines are much the same as they have been for some time past and without indication of any radical turn in prices in the immediate future.

**White Lead.**—At first hands there has been a somewhat freer movement of pure White Lead, including some transactions with jobbers involving good-sized lots for delivery during the next three or four months. Several manufacturers of mixed Leads report decided improvement over their sales of the previous week also. While there is thus an improvement that affords a certain degree of satisfaction the volume of business is nothing extraordinary for the season, and the chances are that a ragged market would be experienced were competition among corrodors as free from restraint as is that existing between manufacturers of mixed Leads. However, prices for the latter are maintained in very good form, and the only variation on corrodors' product is that which jobbers make occasionally to help along the sale of some other goods.

**Red Lead and Litharge.**—In this line there is little or nothing doing outside of the ordinary movement into the channels of distribution and consumption. The volume of business compares favorably with the average for the season, however, although large consumers of low-grade Red Lead are placing hardly the customary orders. Prices have undergone no change.

**Zincs.**—Although some Eastern manufacturers have produced and delivered more Zinc thus far this year than they did in the corresponding period last year, new orders keep coming along in very good shape and there is little, if any, accumulation of stock in manufacturers' hands nor departure from the line of prices that has ruled since the beginning of the year. In other words, it is a very steady market. Foreign brands do not fare as well comparatively in the movement of supply, but are held firmly at old prices.

**Paris Green.**—There is some irregularity in the market for this article. Manufacturers not identified with the association are underselling the combine prices, and some of the association brands, it is reported, have been sold in lots of 500 lb at the official quotation for 5000 and 10,000 lb lots. Whether a cut has been made by any member of the association is not clear, but investigation reveals the fact that some jobbers have shared profits with the customers on both association and outside brands. Sales thus far have hardly been up to the spring season average.

**Colors, &c.**—No changes in prices of any of the staple lines have been announced, and the various branches of the market are without distinctly new feature. Taken as a whole, the distribution of both Dry and Oil Colors seems to be fully up to the average volume, and has been better this week than it was last week. Metallic and Ready-Mixed Paints have enjoyed somewhat freer sale.

**Miscellaneous.**—Block Chalk remains without change and Whiting is steady at the improvement noted last week. Extreme low prices on Putty recently made by same manufacturers have been withdrawn since the advance in cost of Linseed Oil. No change to note on Barytes, Terra Alba or other Clays.

## Oils and Turpentine.

Few changes have taken place in the Oil market during the past week, and, with some few unimportant exceptions, affairs remain in quite satisfactory shape. The late improvement in Linseed Oil is well maintained, as also that which has taken place in Cotton Seed product, while in nearly all other lines remarkable steadiness prevails. Speculation is conspicuous by its absence; export business is of unimportant volume and home trade buying generally is of routine character. Still, the general distribution amounts to considerable in the aggregate, and, as far as at least as the leading goods are concerned, the movement compares very favorably with what is usually experienced at this season of the year.

**Linseed Oil.**—City crushers have enjoyed a very good demand for their product at the advanced price quoted last week and the offering of out-of-town brands has been such as would indicate that outlet for the greater portion of the same has been found in quarters nearer home than the New York market. In any event 42¢, usual terms, stands as the inside price for city brands and 41¢, less 2 ¢ the lowest for Western brands. The offering from second hands in this market has dwindled down to narrow proportions, with little or none at prices below those quoted by crushers. The advance thus far does not appear to have directed attention to substitutes or adulterants, since pure Oil at present prices is not above a normal point.

**Cotton-Seed Oils.**—Some few samples of both crude and refined product have been sold at prices a shade under the extreme highest ones that were reached last week, but the market has since acted under the support of full bids from large operators and a very fair demand from home consumers. On prime crude there were bids of 29½¢, while off grade realized 27½¢ @ 28¢. Bids on Summer Yellow included 32¢ for prompt, 33¢ for July and 34¢ for August delivery. It is believed that supplies are gradually getting closely under control, despite very indifferent interest manifested by exporters, and the tendency of prices seems to be in the direction of a higher level before the new crop season comes around.

**Menhaden Oil.**—There have been several arrivals of new Crude, nearly all of which have been disposed of in 50-barrel and smaller lots at 31¢ to home consumers. Exporters claim that that price is too high as compared with competing Oils in the European markets, but any concession is contingent largely upon the outcome of the season's catch of fish, since comparatively little Oil has been carried over on this or the other side of the Atlantic, while the sale of Oil will probably be conducted under the auspices that gave satisfaction last year.

**Sperm and Whale Oils.**—Crude product has been in moderate demand and the manufactured goods have had rather slow sale also. Prices remain without change.

**Lard Oil.**—The situation is unchanged. Cost of raw material has been somewhat lower, but city pressers have enjoyed a free enough demand to enable them to maintain former prices, and arrivals from outside quarters have not been heavy enough to unsettle matters. Hence a steady market, with very fair volume of business.

**Sprits Turpentine.**—The movement of prices in this and the Southern markets has been almost steadily downward. At the decline large consumers have purchased with rather more freedom, but an accumulation in first hands has taken place sufficient to run prices down to 29¢ @ 29½¢ for regular and 30¢ for machine barrels.



**Eagle Calendar Pencil No. 527.**

Eagle Pencil Company, 73 Franklin street, New York, are putting on the market the Calendar Pencil represented herewith. The manufacturers refer to the usefulness and convenience of this article, combining as it does in compact form a

side. The adjuster is referred to as of great importance in fastening the band upon the hose and coupling of heavy steam, suction, air brake and brewers' hose. The adjusters are made in four sizes. No. 1, hand adjuster for small sizes, No. 2 can be used for bands  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches diameter. No. 3 for bands from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches diameter. No. 4 for bands from

manufacturers, who also claim that it has the only left-hand combination lock on the market, by which it can be operated with great rapidity. Another feature to which they refer is that the entry of sale must be recorded before the money drawer is opened, pointing out that the moment the drawer is released the sale passes under the glass plate on top. The relia-



Eagle Calendar Pencil No. 527.

lead pencil, calendar and rubber eraser. Each pencil is equipped with a calendar for the entire year printed on paper inclosed in a circular nickel frame. As each month expires the sheet representing it is easily detached. The manufacturers call attention to the fact that the price of this pencil is no higher than that asked for a pencil with the rubber attachment only, and on this account they are anticipating a large sale. The Calendar Pencil was patented February 23, 1892.

**Verdon's Improved Double Hose Band.**

William Verdon, Fort Plain, N. Y., is introducing a hose band or clamp, as illustrated in the accompanying cuts. The band is double, having a tongue, X, as shown in Fig. 1, made heavy and of

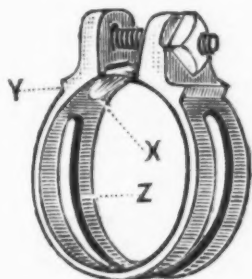


Fig. 1.—Verdon's Improved Double Hose Band.

wedge shape, which, when the nut is screwed up, is forced into the slot, forming a complete band, with a uniform pressure at all points, and, it is stated, making a leak impossible. It is pointed out that the band being double the hose is forced to fit the corrugated surface of the coupling closely. An offset will be seen in Fig. 1 by which the nut of the bolt is

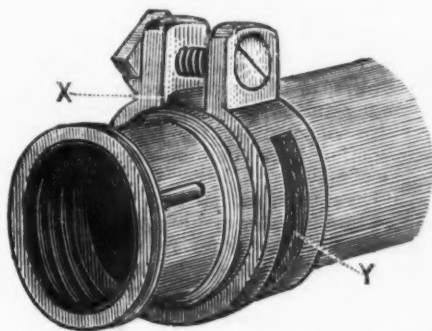


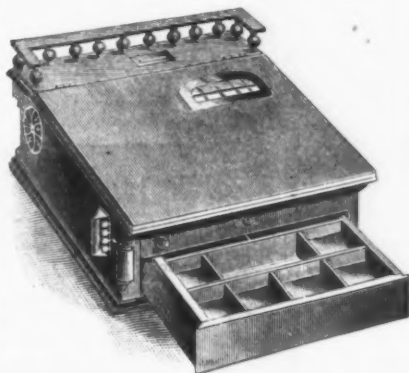
Fig. 2.—Verdon's Band in Position.

locked; so, by the use of a screw driver, and without the use of a wrench, the band may be adjusted. The bands are all provided with shoulders at Y, Fig. 1, under the lugs of the band. An adjuster hinged at the bottom is furnished, which fits in a vise and engages the shoulders on each

$2\frac{1}{2}$  to 5 inches diameter. The smaller bands are made for  $\frac{1}{2}$ -inch 3-ply,  $\frac{1}{2}$  inch 4-ply,  $\frac{3}{4}$  inch 3-ply and  $\frac{3}{4}$ -inch 4 ply rubber hose; also for  $\frac{3}{4}$ -inch cotton hose. These sizes of bands are made especially to fill a demand for a cheap, yet thoroughly reliable, hose band, and are guaranteed by the manufacturer to withstand any pressure that 3-ply hose will withstand.

**The Standard Cash Register.**

The Standard Mfg. Company, East Stroudsburg, Pa., are putting on the market the cash register represented in the illustration herewith given. The combination of this register is set on the two upper keys. Pulling these keys and pushing button in front opens the register. The combination may be changed by using a small screw driver, slightly loosening the plungers on slides, moving backward or forward as desired. To change the three lower plungers the drawer is removed. It is suggested that the plungers on which combination is set should work freely in the slot. In fastening the case to counter or elsewhere the drawer is taken out and the register secured in place by driving two screws into holes provided for them, imbedding them sufficiently so as

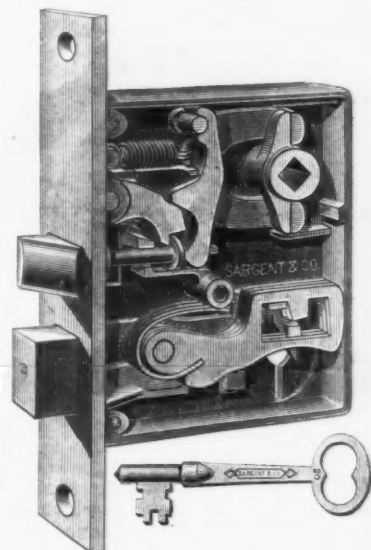


The Standard Cash Register.

not to interfere with the working of the drawer. In operating the register the paper is connected to reel, the paper being dated and the amount of money in drawer noted, after which the cover is locked down, and the key carried by the person who has charge of the cash. In making a sale the amount is recorded through opening on top with pencil. The combination is then worked releasing the drawer and exposing the last sale under glass. It is explained that when the salesman omits to make entry before opening a blank space appears under the glass showing that a mistake has been made, and attention being called to it by the person making the next sale the amount is easily remembered. When the day's business is completed the top is unlocked and the lever on right side raised, thus allowing reel to be turned backward by pulling paper. The low price at which this register is offered is especially emphasized by the

**Sargent's Reversible Easy Spring Lock.**

Sargent & Co., New York, are offering the trade this lock, which combines some new features, as shown in the accompanying illustration. The spring which actuates



Sargent's Reversible Easy Spring Lock.

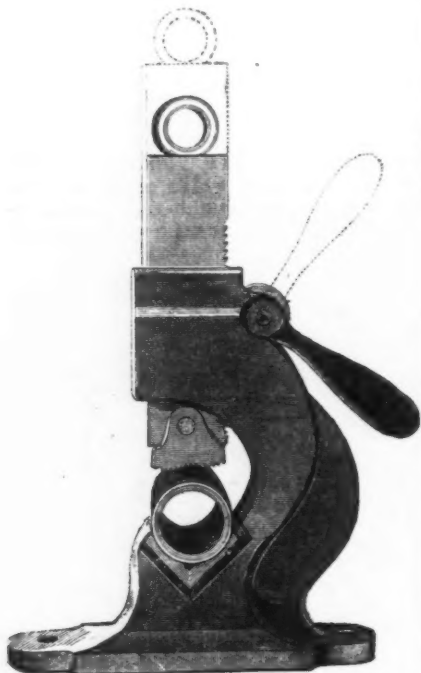
the latch bolt is a good stiff spiral spring with a long leverage for the latch bolt, and a direct pull for the knob, which enables the latch bolt to work very freely, so that the door does not have to be slammed or stand ajar, but latches gently as it is closed. This is referred to as producing the desirable combination of easy on the latch bolt and heavy on the knob. The spring is arranged to work in a direct line, and is so placed that it stands clear from all obstruction and avoids all friction. It cannot rub on the case, and it is impossible for it to bow or to get out of position. Working in a direct line and so short a distance, without friction, is alluded to as giving great durability, so that the spring is not liable to need replacing, nor the lock to get out of order. To reverse the bolt the lock is held upside down, and the latch bolt is pushed clear in. This allows the dog underneath the spring to drop down, and to engage the latch bolt lever. The latch is then drawn out and reversed, and the dog dropped back to its original position. This is but the work of a moment, and avoids the necessity of taking off the cap to change the hand of the lock. After the lock is placed upon the door no reversing is re-

quired, and the lock is so constructed that the latch bolt cannot be pulled out by mischievous persons or jarred out while in use. We are informed by Sargent & Co. that all knob locks having their name on the case have their patent easy spring.

To show the work of this lock, and the simplicity of its reversible mechanism, the manufacturers have samples mounted on a nicely finished block with a glass cap to the lock. This way of showing the inside of the lock is protected by letters patent. It has the merit of showing all the parts through the glass and allowing all parts to work freely without the danger of their being misplaced.

#### Indispensable Pipe Vise.

Bonney Vise and Tool Works, Armstead O. Bills proprietor, Philadelphia, Pa., are introducing this article, as illustrated herewith. It is provided with a



*Indispensable Pipe Vise.*

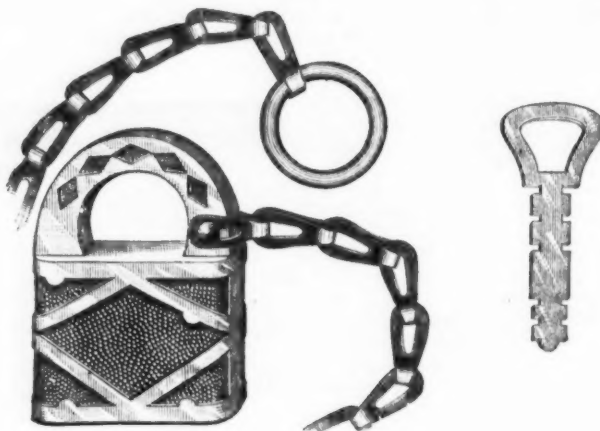
steel slide with a rack carrying at its end a double curved gripping jaw, which, it is stated, is pivoted in such a manner that it only enters the pipe to the depth of the tooth, thus insuring it holding the pipe firmly and preventing it being crushed. The working parts are made of forged steel and the frame of steel casting. The manufacturers claim that a single downward movement of the lever will grip and hold any size pipe or rod up to 2½ inches, that it positively will not turn; that it will not crush the pipe nor squeeze it out of round. The fact that it is quick in operation and strong in construction is referred to as making it a desirable vise.

#### Aluminum Bicycle Pad Lock.

Slaymaker, Barry & Co., Lancaster, Pa., John H. Graham, agents, 113 Chambers street, New York, are offering the trade an aluminum pad lock, as illustrated herewith. Referring to the material of which it is made, the manufacturers state that aluminum, being the lightest of metals (about one-fourth the weight of bronze metal) and of a beautiful white color, susceptible of a very high polish, which dims but little in handling, neither water nor salt and but few acids affecting it, and possessing great strength, is the ideal metal of which to make locks for bicycles, &c. They are offering this as the only aluminum pad lock on the market, in a handsome design and beautifully finished,

with such interior works as, they state, will render it perfectly secure and very durable. The lock is made both with and without chain; in the former case the chain is 14 inches long, of nickel plated

the burdens of the day begin to be a heavy weight; in the holidays, crowded with everything which would tend to drive from the mind the cares of the bread winning, gain-getting struggle of life.



*Aluminum Bicycle Pad Lock.*

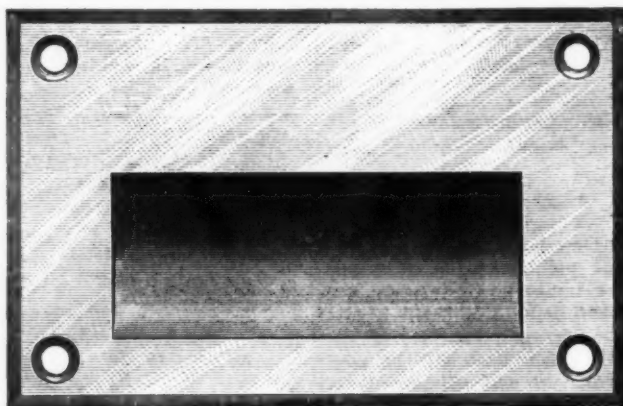
brass. The same lock is made in bronze metal. The lock is a spring, self-locking, spring shackle, with two rolled steel keys, cut, to each lock.

#### The Claflen Flush Drawer Pull.

The Claflen Mfg. Company, Cleveland, Ohio, are putting on the market a flush drawer pull, known as No. 160, as illustrated herewith. It is particularly adapted for use on drawers behind closet doors, or where drawers are to be taken out and stood on counters, &c., as the sample drawers of builders' hardware are, when showing goods. The pull being flush does not mar the counters. The pulls are

The American business man, as a rule, if he is what we term "up with the times," a "hustler," does not take any holidays, and he can be found at his work early and late, without an intermission. No dropping out for a social hour with him—it would never do, for to the American heart percentage and profit, exchange and barter, dimes and dollars, seem to be the synonyms for every luxury and blessing which should make life worth the living.

The average American business man has a still greater fault, which comes as a necessary result, attendant upon his daily custom of attaching a secondary value to everything which does not carry with it a tangible profit in the shape of a dividend payable in gold, and this is the fact that owing to the overwork of the day, he car-



*The Claflen Flush Drawer Pull.*

made in plain bronze or brass, antique, copper and oxidized silver.

#### Don't Carry Your Business Home.

The American plan of business, founded as it is upon rush and push, hurry and hurrah, is at best a grinding system, wearing away the lives of participants in it, and the question arises, How can some relief be found from this constant taxing to the uttermost of the strength and ability?

In no country in the world are the people living in the mental and physical strain they are here. In every other country the relief comes to the business man and the laborer in the shorter hours occupied; the few moments' respite enjoyed with companions over the glass and the lunch, when the forenoon is but half spent, and its repetition again in the afternoon, just as

ries home his business disappointments and failures, to be vented in a pleasure-destroying petulance, which is sure to destroy the opportunity for the rest and home comfort that tired nature so much needs and craves.

We have to work at this universally adopted rate in order to keep up with the competition of the times in any line in which we may be engaged, but even this being true, can the business man not cultivate the habit of laying off the cares of his surroundings, as he does his office coat, and go into the atmosphere of home or society forgetting the dark cloud of the day, trusting that a brighter to-morrow's sun may dispel it or bring a clearer sky?

It can be done. We have in our mind a character of this description, who closes the doors on every troublesome difficulty when he closes his safe, and only opens them, to public view at least, when he begins the battle of another day. He makes



it a rule to never mention in his home the doubts he may entertain, nor more than mention the anticipated successes until they are fully assured facts. His home coming is sure to bring its ray of sunshine, and he has so schooled himself in the matter of confining business to business hours, as to find many a good night's sleep upon the pillow which would bring only fretful tossing to the ordinary man.

Don't carry your business home. Leave it down town; wait and meet its hardships to-morrow when you have renewed strength.

Don't meet your family with a flag of despair flying at half mast, and by word and act send a chill to the hearth and hearts of your home which will destroy every chance for them to help you by the loving tenderness they would otherwise extend. It is a hard matter to accomplish, we know. There are a thousand and one things to banish from your mind which it seems impossible to do, but it can be done.

Forget when you close your ledger that your bookkeeper made a mistake which cost you \$100; forget when you close your safe that the note you hold is yet unpaid, and the money you depended on to meet the claims upon you to-morrow is not there; forget all, banish the last disagreeable business talk as you leave your friend and step from the car at your home, and if you can't carry into it the brightest sunshine, don't bring a cloud by harping on failure.

Life is worth living if its pleasures are not murdered by the misapplication of things to time and place. Let your out-of-business hours drive the wrinkles from your brow and strengthen your manhood for the effort the future will demand.—*Merchant Sentinel.*

### Terrell's Handy Bench Stop and Knife.

Terrell & Vroom, 868 Eighth avenue, New York, have an ingenious bench stop for carpenters' use, which they state has met with favor for domestic and foreign use. The leading size, No. 2, is 3 inches long by 1 inch wide. They are made entirely of steel, one end having a sharp bevel curve which rests on the bench, while the other end is beveled on the top, provided with teeth and supported by two legs or pins underneath. It is stated that no mortising, screws or nails are required to hold it on the bench, as a light tap of the hammer will secure it in position, while a light pry under the front will remove it. The point is made that the stop will grip the work quickly and hold it tight to the bench, and that used as a bench knife, it is easily adjusted and requires no claw hammer to draw it from the bench or work. It may also be used to hold wide lumber straight on the side of the bench. These are made in three sizes, Nos. 1, 2, and 3, as follows: No. 1, beveled on the underside, for light and thin work; No. 2, beveled on top, for general use; No. 3, beveled on top, larger and longer prongs for heavy work.

"Mexico was never in a more deplorable condition than at present," said Juan Corrilas of Saltillo, Mexico, when in St. Louis last week. "Outside of the sub-tropical districts and in the Valley of Mexico there has practically been no rain in the Republic for more than a year. The drouth-stricken region comprises all the northern, central and eastern tiers of States with the exception of the southern half of Tamaulipas, which is moistened by the gulf showers. I estimate the population directly affected at 3,000,000. This means that there are that number of people who are unable to move away, and whose credit for the necessities of life will very shortly be entirely exhausted."

### America's Trade with Peru.

Encouraging accounts are given by the American Minister to Peru, John Hicks, who recently returned to this country, respecting trade prospects with that republic. His observation and his knowledge of the goods required by the Peruvian merchants show that American goods could be sold there readily on their merits, and could compete on the score of cost also with goods of German and English manufacture if it were not for the high freight rates ruling between American ports and ports on the west coast of South America, owing to the lack of direct steamship connections. Minister Hicks says:

"Steamship communication with Peru would put the United States on a basis of even competition with other nations. Now this country is handicapped, for freight from Liverpool to Peru can be shipped at an astoundingly low figure. If this obstacle could be removed I feel sure that we could do much business with Peru, both in feeding that country and supplying it with manufactured goods. A traveling man for a combination of American manufacturers whom I met in Lima told me that he had sold \$250,000 worth of goods in Chili. The amount of goods sold was not the most striking part, either. He had sold them to English and German merchants, and the goods were such things as knives and forks, lamps and electrical goods, dentists' materials and instruments, just the kind of goods that these people might be expected to buy from their own country. One English house had bought 1000 dozen of American plated knives and forks from him. But freights from the United States are in the way of our extending our commerce with Peru. Without direct steamship facilities that will enable us to send freight to points on the west coast of South America without transferring them at any point, we cannot do much. If goods have to be unloaded at the Isthmus and transferred the cost of freight becomes too high to admit of competition. To show you what we would have to compete with, freight transportation has been offered from Liverpool to any part of the west coast of South America at 10 shillings, or \$2.50 of our money, a ton. This is since the new line of thirteen large steamers, running one steamer a month, has been put into operation. How can the United States expect to sell goods in Peru when merchandise can be shipped cheaper from Hamburg and other distant European ports? Four or five English lines, two or three German lines and others furnish such good facilities that there is a steamer almost every day, but none for the United States."

The Mexican Government statistical report of the amount of exports for the first half of the current fiscal year shows that the total increase over the corresponding period for the previous fiscal year is \$8,876,019, of which precious metals made up \$7,419,701 and products \$145,318. Silver dollars were exported to the amount of \$18,197,211, an increase of more than \$5,000,000. The United States takes the largest share.

The new bridge in Paris, called the Pont Mirabeau, is to be constructed somewhat on the cantilever principle, since it will rest upon two piers and meet in the center. Its stability, however, will depend upon an adjustment of weight like that of a huge crane. The long arm meeting in the center will be of light construction, and to compensate for its weight the short arm received by the abutment will be specially heavy.

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# CURRENT HARDWARE PRICES

JUNE 1, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

## Adjusters, Blind.

Domestic. . . . . \$ dos \$3.00, 35¢  
Wheeler. . . . . \$ dos \$10.00. . . . . 60¢  
North's. . . . . 1st net @ 10¢  
Zimmerman's—See Fasteners Blind

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils.

Eagle Anvil, \$ 10¢. . . . . 15¢  
Peter Wright's. . . . . 11¢  
Armstrong's Horse Shoe. . . . . 10¢  
Am. Wrought Horse Shoe Brand. . . . . 11¢  
Trenton. . . . . 10¢  
Wilkinson's. . . . . 10¢  
Moore & Barnes Mfg. Co. . . . . 35¢

## Anvil Vise and Drill—

Millers Falls Co., \$18.00. . . . . 20¢  
Cheney Anvil and Vise. . . . . 25¢  
Allen Anvil and Vise, \$3.00. . . . . 40¢  
Star. . . . . 45¢

## Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Douglas Mfg. Co. . . . . 70¢  
Wm. A. Ives & Co. . . . . 70¢  
Humphreysville Mfg. Co. . . . . 70¢  
French, Swift & Co. (F. H. Beecher, P. & W. Co.) . . . . . 70¢  
Rockford Bit Company. . . . . 55¢  
Cook's, Donnell Mfg. Co. . . . . 55¢  
Cook's, N. H. Copper Co. . . . . 55¢  
Ives' Circular Lip. . . . . 60¢  
Patent Solid Head. . . . . 30¢  
C. E. Jennings & Co., No. 10, extension. . . . . 40¢  
C. E. Jennings & Co., No. 30. . . . . 60¢  
C. E. Jennings & Co., Auger Bits, \$ set. . . . . 25¢  
Lewis' Patent Single Twist. . . . . 45¢  
Russell Jennings' Augers and Bits. . . . . 25¢  
Imitation Jennings' Bits. . . . . 60¢  
Fugh's Black. . . . . 20¢  
Fugh's Jennings' Pattern. . . . . 4¢  
Car Bits. . . . . 60¢  
Car Bits, P. & W. Co. . . . . 60¢  
Snell's Car Bits. . . . . 60¢  
L. Hommedieu Car Bits. . . . . 15¢  
Forster's Pat. Auger Bits. . . . . 30¢  
Cincinnati Bell Hangers' Bits. . . . . 30¢

## Bit Stock Drills—

More Twist Drills. . . . . 50¢  
Standard. . . . . 50¢  
Cleveland. . . . . 50¢  
Syracuse, for metal. . . . . 50¢  
Syracuse, for wood (wood list). . . . . 30¢  
Cincinnati, for wood. . . . . 30¢  
Cincinnati, for metal. . . . . 45¢

## Expansive Bits—

Clarks' small, \$18; large, \$26. . . . . 35¢  
Ives' No. 4, \$ dos \$60. . . . . 40¢  
Swan's. . . . . 40¢  
Steer's, No. 1, \$26; No. 2, \$22. . . . . 35¢  
Stearns' No. 2, \$48. . . . . 30¢

## Gimlet Bits—

Common. . . . . \$ gross \$2.75 @ \$3.25  
Diamond. . . . . \$ dos \$1.25. . . . . 41¢  
See. . . . . 25¢  
Double Cut, Shepardson's. . . . . 45¢  
Double Cut, Ct. Valley Mfg. Co. . . . . 30¢  
Double Cut, Hartwell's, \$ gro. . . . . 45¢  
Double Cut, Douglas's. . . . . 40¢  
Double Cut, Ives'. . . . . 60¢

## Hollow Augers—

Ives. . . . . 35¢  
French, Swift & Co. . . . . 35¢  
Douglas's. . . . . 35¢  
Bonney's Adjustable, \$ dos \$48. . . . . 40¢  
Stearns'. . . . . 30¢  
Ives' Expansive, each \$4.50. . . . . 60¢  
Universal Expansive, each \$4.50. . . . . 20¢  
Wood's. . . . . 25¢  
Cincinnati Adjustable. . . . . 25¢  
Cincinnati Standard. . . . . 25¢

## Ship Augers and Bits—

L'Hommiedieu's. . . . . 15¢  
Watrous'. . . . . 15¢  
Snell's. . . . . 15¢  
Snell's Ship Auger Pat's Car Bits. . . . . 15¢

## Awl Hafts—See Hafts, Awl.

Awls—  
Awls, Sewing, Common. . . . . \$ gr. 85¢ @ 90¢  
Awls, Should, Peg. . . . . \$ gr. \$1.50 @ \$1.55  
Awls, Pat. Peg. . . . . \$ gr. 35¢ @ 38¢  
Awls, Shouldered Brad. . . . . \$ gr. \$1.30 @ 1.40  
Awls, Handled Brad. . . . . \$ gr. \$2.50 @ \$3.00  
Awls, Handled Scratch. . . . . \$ gr. \$4.00 @ \$4.50  
Awls, Socket Scratch. . . . . \$ dos, \$1.10 @ \$1.20

## Awl and Tool Sets—See Sets, Awl and Tool.

Axes—  
First quality, best brands. . . . . \$7.00 @ \$7.50  
First qual., other brands. . . . . 6.00 @ 6.75  
Second quality. . . . . 6.00 6.50

## Axle Grease—See Grease, Axle.

Axles—  
No. 1, 3¢ @ 4¢, No. 2, 5¢ @ 6¢  
Nos. 7 to 14. . . . . 8¢ @ 10¢  
Nos. 15 to 18. . . . . 47¢  
Nos. 19 to 22. . . . . 70¢  
Concord Axles, loose collar. . . . . 4¢  
Concord Axles, solid collar. . . . . 5¢  
National Tubular Self-Collaring. . . . . 35¢

## Bag Holders.—See Holders, Bag.

Balances—  
Spring Balances. . . . . 40¢  
No. 2000 30 30  
Chatillon, \$ dos. . . . . \$0.80 0.95 1.75 net  
Chatillon Straight Balances. . . . . 40¢  
Chatillon Circular Balances. . . . . 60¢

## Barb Wire.—See Wire, Barb.

## Bars.

Cross—  
Cast Steel. . . . . \$ 3 3/4  
Iron, Steel Points. . . . . \$ 2 3/4

## Basins, Wash—

Standard Fiberglass, No. 1, 10 1/4-inch, \$2;  
12-inch, \$3.25; 13 1/4-inch, \$2.75; 15-inch,  
\$3.25.

## Beams, Scale—

Scale Beams, List Jan. 12, '82. . . . . 50¢ @ 10¢

Chatillon's No. 1. . . . . 40¢  
Chatillon's No. 2. . . . . 50¢  
Custer's. . . . . 35¢

## Beaters.

Dover. . . . . \$ dos \$1.50

Duplex (Standard Co.). . . . . \$ dos \$1.25

Rival (Standard Co.). . . . . \$ dos \$1.25

Duplex Extra Heavy (Standard Co.). . . . . \$ dos \$3.50

Bryant's. . . . . \$ gro \$14.00

Double (H. & R. Mfg. Co.). . . . . \$12.00; No. 1, \$15.00; No. 2, \$36.00

Easy (H. & R. Mfg. Co.). . . . . \$ gro \$12.00

Triple (H. & R. Mfg. Co.). . . . . \$ gro \$10.50

Spiral. . . . . \$ gro \$4.25 @ 4.50

Improved Acme (H. & R. Mfg. Co.). . . . . \$ gro \$9.00

Paine, Diehl & Co.'s. . . . . \$ gro \$9.00

Silver & Co. . . . . \$ gro \$5.50

Keystone, P.D. & C., Each, No. 1, \$1; No. 2, \$2. . . . . 20¢

## Bells.

Common Wrought. . . . . 60¢ @ 10¢

Western, Sargent's list. . . . . 70¢ @ 10¢

Kentucky, "Star". . . . . 20¢ @ 10¢

Kentucky, Sargent's list. . . . . 70¢ @ 10¢

Kentucky Durham. . . . . 70¢ @ 10¢

Dodge, Genuine Kentucky. . . . . 70¢ @ 10¢

Texas Star. . . . . 60¢ @ 10¢

Gong, Abbe's. . . . . 35¢ @ 10¢

Gong, Yankee. . . . . 45¢ @ 10¢

Gong, Barton's. . . . . 40¢ @ 10¢

Crane, Taylor's. . . . . 25¢ @ 10¢

Crane, Brooks'. . . . . 50¢ @ 10¢

Crane, Cone's. . . . . 10¢

Crane, Cone's. . . . . 20¢ @ 10¢

Lever, Sargent's. . . . . 60¢ @ 10¢

Lever, Taylor's Bronzed or Plated. . . . . net

Lever, Taylor's Japanned. . . . . 25¢ @ 10¢

Lever, R. E. M. Co.'s. . . . . 50¢ @ 10¢

Wollensak's. . . . . 20¢

Bigelow & Dowse. . . . . 30¢

Taylor's. . . . . 20¢

Light Brass. . . . . 70¢ @ 10¢

Extra Heavy. . . . . 70¢

White. . . . . 70¢

White Chime. . . . . 35¢ @ 10¢

Globe Cone's Patent. . . . . 25¢ @ 10¢

Miscellaneous. . . . . 40¢ @ 10¢

Farm Bells. . . . . \$ 3 @ 3 1/4

Steel Alloy Church and School Bells. . . . . 40¢

Bellows—  
Blacksmiths'. . . . . 60¢ @ 10¢

Molders. . . . . 40¢ @ 10¢

Hand Bellows. . . . . 40¢ @ 10¢

Belting, Rubber—  
Common Standard. . . . . 70¢ @ 10¢

Standard. . . . . 70¢ @ 10¢

Extra. . . . . 70¢ @ 10¢

N.Y.B. & P. Co., Carbon. . . . . 60¢ @ 10¢

N.Y.B. & P. Co., Diamond. . . . . 50¢

N.Y.B. & P. Co., Para. . . . . 40¢

Bench Steps—See Steps, Bench.

Benders and Upsetters, Tire.

Stoddard's Lightning Tire Upsetters. . . . . 15¢

Detroit Perfected Tire Bender. . . . . 15¢

Bits—  
Auger, Gimlet, Bit Stock Drills, &c.,  
see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters,  
Blind.

Blind Fasteners—See Fasteners,  
Blind.

Blind Staples—See Staples, Blind.

Blocks—  
Cleveland Block Co., Mal. Iron. . . . . 50¢ @ 10¢

Moore's Novelty, Mal. Iron. . . . . 50¢

Sure Grip Steel Tackle Blocks. . . . . 25¢

Boards, Steel.

Wood Lined Crystal. . . . . 50¢

Embossed. . . . . 45¢

Paper Lined Zinc. . . . . 55¢

Crystal. . . . . 55¢

Embossed. . . . . 55¢

New Tacoma. . . . . 55¢

Bolts—  
Carriage, Machine, &c.—  
Com. list June 10, '84. . . . . 75¢ @ 10¢

Genuine Eagle, Norway, list Oct. '84. . . . . 80¢ @ 10¢

R.B. & W., old list. . . . . 80¢ @ 10¢

Phila. pattern, list Oct. 7, '84. . . . . 75¢ @ 10¢

Machine, list Jan. 1, 1890. . . . . 80¢ @ 10¢

Bolt Ends, list Jan. 1, 1890. . . . . 75¢ @ 10¢

Door and Shutter—  
Cast Iron Barrel, Square, &c. . . . . 70¢ @ 10¢

Cast Iron Shutter Bolts. . . . . 70¢ @ 10¢

Cast Iron Chain (Sargent's list). . . . . 65¢ @ 10¢

Ives' Patent Door Bolts. . . . . 60¢ @ 10¢

Wrought Barrel. . . . . 70¢ @ 10¢

Wrought Square. . . . . 70¢ @ 10¢

Wt. Shutter, all Iron, Stanley's. . . . . 60¢ @ 10¢

Wt. Shutter, Brass Knob. . . . . 40¢ @ 10¢

Wt. Shutter, Sargent's list. . . . . 60¢ @ 10¢

Wt. Sunk Flush, Sargent's list. . . . . 65¢ @ 10¢

Wt. Sunk Flush, Stanley's list. . . . . 70¢ @ 10¢

Wt. R.K. Flush, Com'r. . . . . 45¢ @ 10¢

## Stove and Plow—

Stove. . . . . 60¢

Plow. . . . . 60¢

R. B. & W., Plow. . . . . 55¢

Tire—  
Common, list Feb. 25, '83. . . . . 65¢

Port Chester Bolt and Nut Company. . . . . 40¢ @ 10¢

Empire, list Feb. 25, '83. . . . . 65¢

Keystone, Philad., list Oct. '84. . . . . 80¢

Norway, Phila., list Oct. '84. . . . . 75¢

American Screw Company—  
Norway, Phila., list Oct. 15, '84. . . . . 75¢

Eagle, Phila., list Oct. 15, '84. . . . . 80¢

Philad., list Oct. 15, '84. . . . . 80¢

Ray State, list Feb. 25, '83. . . . . 65¢

R.B. & W., Philad., list Oct. 15, '84. . . . . 80¢

Borers, Tap.

Common and Ring. . . . . 20¢ @ 10¢

Ive's Tap Borer. . . . . 35¢ @ 10¢

Enterprise Mfg. Co. . . . . 30¢ @ 10¢

Clark's. . . . . 35¢ @ 10¢

Borax. . . . . \$ 9¢ @ 10¢

Boring Machines—See Machines.

Bow Pins—See Pins, Bow.

Boxes, Wagon. . . . . 34¢

Braces—  
American Bit Brace Co.:  
Nos. 10, 12, 20. . . . . 60¢ @ 10¢

Nos. 11, 21, 24, 27. . . . . 70¢ @ 10¢

Nos. 22, 25, 26. . . . . 60¢ @ 10¢

Nos. 12, 26, 27. . . . . 70¢ @ 10¢

Ball Braces, net. . . . . \$1.12 to \$1.25

Amidon's  
Barker's Imp'd Plain. . . . . 75¢ @ 10¢

Barker's Imp. Nickel. . . . . 55¢ @ 10¢

Barker's Imp. Nickel. . . . . 75¢ @ 10¢

Belphe Rachet. . . . . 60¢

Globe Jawed. . . . . 40¢ @ 10¢

Corner Brace. . . . . 40¢ @ 10¢

Universal, 8 in., \$2.10; 10 in. . . . . \$2.25

Buffalo Ball. . . . . \$1.10 @ \$1.1

Barber's.  
Nos. 10 to 16. . . . . 50¢ @ 10¢

Nos. 30 to 33. . . . . 60¢ @ 10¢

Nos. 40 to 63. . . . . 50¢ @ 10¢

Saxon's.  
Barker's Imp. Polished. . . . . 75¢ @ 10¢

Barker's Imp. Nickel. . . . . 55¢ @ 10¢

Ratchet, Polished. . . . . 50¢ @ 10¢

Ratchet, Nickel. . . . . 40¢ @ 10¢

Buffalo Ball. . . . . net, \$1.10 @ \$1.15

Bartholomew's.  
Nos. 25, 27 and 30. . . . . 50¢ @ 10¢

Nos. 117, 118, 119. . . . . 70¢ @ 10¢

Common Ball, American. . . . . \$1.00 @ \$1.10

Fray's Genuine Spofford's. . . . . 50¢ @ 10¢

Fray's No. 70 to 120, 81 to 125, 207 to 415. . . . . 50¢ @ 10¢

Ives' New Haven Novelty. . . . . 70¢ @ 10¢

New Haven Ratchet. . . . . 80¢ @ 10¢

Barber Ratchet. . . . . 60¢ @ 10¢

Barber. . . . . 60¢

Spofford. . . . . 60¢ @ 10¢

Osagood's Ratchet. . . . . 40¢ @ 10¢

P. S. & W. Co., Peck's Patent. . . . . 60¢

Brackets—  
Shelf, plain. . . . . 35¢

Regular list. . . . . 65¢ @ 70¢

Sargent's list. . . . . 65¢ @ 60¢ @ 10¢

Shelf, fancy. . . . . 60¢



**Clamps—**  
 A. I. Tool Co.'s Wrought Iron.....25¢  
 Adjustable, Cincinnati.....15¢10¢  
 Adjustable, Hammers.....15¢  
 Adjustable, Stearn's.....30¢40¢10¢  
 Stearn's Adjustable Cabinet and Cor-  
 ner.....30¢40¢10¢  
 Cabinet, Sargent's.....70¢10¢  
 Carriage Makers', Sargent's.....70¢10¢  
 Carriage Makers', P. S. & W. Co. 40¢10¢  
 Eberhard Mfg. Co.....40¢25¢40¢10¢  
 Warner's.....40¢10¢40¢10¢5¢  
 Saw Clamps, see Vices, Saw Fliers.  
 Carpenters, Cincinnati.....25¢10¢

**Cleavers.**  
*Butchers'.*  
 Bradley's.....35¢40¢  
 L. & J. White.....20¢25¢  
 Beatty's.....40¢40¢25¢  
 New Haven Edge Tool Co.'s.....40¢  
 P. S. & W.....35¢25¢35¢40¢  
 Foster Bros.....40¢40¢25¢  
 Schulte, Lohoff & Co.....40¢40¢25¢

**Clips—**  
 Norway, Axle, 1/4 & 5-16.....55¢55¢5¢  
 and grade Norway Axle, 1/4 & 5-16. 65¢55¢  
 Superior Axle Clips.....65¢55¢70¢  
 Norway Spring Bar Clips 5-16. 70¢55¢  
 Wrought-Iron Felice Clips.....70¢55¢  
 Steel Felice Clips.....70¢55¢  
 Baker Axle Clips.....25¢

**Cloth and Netting, Wire—See Wire, &c.**

**Cockeyes.....60¢**

**Cocks, Brass.....60¢25¢**

**Coffee Mills—See Mills, Coffee**

**Collars, Dog, &c.....40¢10¢**

**Medford Fanny Goods Co.....40¢10¢**

**Embossed, Gilt, Pope & Steven's Hat.....30¢10¢**

**Leather, Pope & Steven's Hat.....40¢**

**Brass, Pope & Steven's Hat.....40¢**

**Chapman Mfg. Company.....50¢10¢90¢**

**Combs, Curry.....60¢10¢50¢10¢10¢**

**Fitch's.....60¢10¢50¢10¢10¢**

**Rubber, per doz \$10.00.....30¢**

**American Curry Comb Co.....Not prices**

**Compasses, Dividers, &c.....70¢70¢10¢**

**Bemis & Call Co's.....60¢25¢**

**Dividers.....60¢25¢**

**Compasses & Callipers.....60¢25¢**

**Wing and Inside or Outside.....60¢25¢**

**Double.....60¢**

**(Call's Pat. Inside).....60¢**

**Excelsior.....60¢**

**J. Stevens & Co.'s.....50¢10¢**

**Starrett's.....50¢10¢**

**Spring Callipers and Dividers.....25¢10¢**

**Lock Callipers and Dividers.....25¢**

**Combination Dividers.....25¢**

**Coopers' Tools—See Tools, Coopers'.**

**Cord—**

**Scab.....**

**Common.....70¢10¢11¢**

**Patent, good quality.....70¢12¢12¢**

**White Cotton Braided, fair.....24¢25¢**

**Common Russia Sash.....70¢12¢13¢**

**Patent Russia Sash.....70¢12¢13¢**

**Cable Laid Italian Sash.....70¢21¢21¢**

**India Cable Laid Sash.....70¢12¢12¢**

**Silver Lace.....**

**A Quality, White, 50¢.....25¢**

**A Quality, Drab, 50¢.....25¢**

**B Quality, White, 30¢.....10¢**

**B Quality, Drab, 30¢.....10¢**

**Sylvan Spring, Extra Braided White, 30¢**

**Sylvan Spring, Extra Braided White, 30¢**

**Semper Idem, Braided, White, 30¢**

**Egyptian, India Hemp, Braided, 20¢**

**Massachusetts, White, 20¢**

**Samson—**

**Draw Cut, each:**  
 Nos. 5 2 6 8  
 350 \$75 \$80 \$255.....30¢25¢  
 Beef Shavers (Enterprise).....30¢10¢30¢  
 Little Giant (P. S. & W. Co.).....50¢  
 Chaddorn's Smoked Beef Cutter, per doz.....\$65.00

**Tobacco.....**

**Champion.....20¢10¢30¢**

**All Iron.....70¢11.00, 39¢4**

**Nashua Lock Co.'s, per doz, \$18.00 50¢55¢**

**Wilson's.....50¢**

**Sargent's.....70¢24, 55¢10¢**

**Acme.....70¢20.00, 40¢**

**Washer.....**

**Smith's Pat.....70¢12.00, 30¢10¢10¢**

**Johnson's.....70¢11.00, 39¢4**

**Penny's.....70¢11.00, 39¢4**

**Appleton's.....70¢16.00, 60¢10¢**

**Bonney's.....70¢10¢**

**Cincinnati.....25¢10¢**

**Dampers, &c.....**

**Dampers, Buffalo.....40¢10¢**

**Buffalo Damper Clips.....40¢10¢**

**Crown Damper.....40¢**

**Excelsior.....40¢10¢**

**Diggers, Post Hole, &c.....**

**Samson Post Hole Digger, per doz \$36.00.....25¢**

**Fletcher Post Hole Augers, per doz \$36, 20¢**

**Eureka Diggers.....70¢12.50, 14.00**

**Lead's.....70¢12.50, 14.00**

**Vaughan's Post Hole Auger, per doz.....\$13.00, 14.00**

**Kohler's Little Giant.....70¢18.00**

**Kohler's Hercules.....70¢18.00**

**Kohler's New Champion.....70¢18.00**

**Schneider.....70¢18.00**

**Ryan's Post Hole Diggers.....70¢24.00**

**Cronk's Post Bars, per doz \$60.00.....50¢50¢10¢**

**Gibbs Post Hole Digger.....70¢15.00**

**Imperial.....70¢15.00**

**Shimer's Hollow Handle, per doz, \$24.50¢**

**Dividers.....**

**See Compases.**

**Dog Collars—See Collars, Dog, &c.**

**Door Springs—See Springs, Door.**

**Drawers.....**

**Money, per doz.....\$18.25, 20**

**Drawing Knives—See Knives, Drawing.**

**Drills and Drill Stocks.....**

**Blacksmiths'.....each \$1.75**

**Blacksmiths' Self-Feeding, each \$7.50, 30¢**

**Breast, Wilson's.....80¢25¢**

**Breast, Millers Falls.....each \$3.00, 25¢**

**Breast, Bartholomew's.....each \$2.50, 25¢**

**25¢10¢40¢**

**Ratchet, Merrill's.....30¢20¢40¢**

**Ratchet, Whigmore's.....25¢**

**Ratchet, Parker's.....20¢10¢**

**Ratchet, Wilson's.....20¢10¢**

**Ratchet, Weston's.....30¢25¢**

**Ratchet, Moore's Triple Action.....40¢30¢**

**Ratchet, Curtis & Curtis.....30¢**

**Wilson's Hand Drill, Plain, \$11.00.....\$11.00**

**Wilson's Drill Stocks.....10¢**

**Enameled and Tinned Ware—**  
 See Ware, Hollow.

**Escutcheons—**

**Escutcheons—**

**Door Lock.....Same dis as Door Locks.**

**Brass Thread.....60¢60¢10¢**

**Wood.....25¢**

**Expanded Metal.....**

**List No. 5.....**

**Lathing.....10¢**

**Fencing, Painted Sheets.....20¢**

**Netting, Painted Sheets.....20¢**

**Door Mats, Galvanized.....25¢**

**Window Guards, Painted.....15¢**

**Tree Guards, Painted.....15¢**

**Extractors, Lemon Juice—See Squeezers, Lemon.**

**Fasteners, Blind—**

**Mackrell's, per doz, \$1.00.....20¢20¢10¢**

**Van Sand's Screw Pat., \$15 per gr.....60¢10¢**

**Van Sand's Old Pat., \$15.00 per gr.....55¢10¢**

**Austin & Eddy No. 2008 per gr.....\$4.00**

**Security Gravity, per gr.....\$9.00**

**Zimmerman's.....45¢**

**Faucets.....**

**Fenn's.....40¢**

**Bohrer's Pat. Rubber Ball.....35¢4**

**Fenn's Cork Stops.....35¢4**

**Star.....60¢**

**Frary's Pat. Petroleum.....40¢55¢25¢**

**B. & L. B. Co.....**

**West's Lock, Open and Shut Key.....50¢**

**Star Metal Plug, new list.....40¢**

**Lockport, Metal Plug, reduced list.....60¢**

**Metallic Key, Leather Lined.....60¢10¢10¢**

**Cork Lined.....70¢25¢70¢10¢**

**Burns's Red Cedar.....60¢**

**Burns's Red Cedar, bbl lots.....50¢10¢**

**John Sommers'.....**

**Peerless Best Block Tin Key.....40¢**

**IXL, 1st quality, Cork Lined.....50¢**

**Diamond Lock.....40¢**

**Perfection, Fla. Red Cedar.....60¢**

**Goodenough Cedar.....60¢**

**Boat Metallic Key.....60¢**

**Reliable Cork Lined.....60¢**

**Western Pattern Cork Lined.....50¢**

**Self-Measuring.....**

**Enterprise, per doz \$36.00.....30¢10¢**

**Lane's, per doz \$36.00.....25¢10¢**

**Victor, per doz \$36.00.....25¢10¢**

**Felice Plates—See Plates, Felice.**

**Fifth Wheels.....**

**Derby and Cincinnati.....45¢25¢**

**Brewster.....50¢25¢**

**Files.....**

**Domestic.....**

**Nicholson Files, Rasps, &c.....60¢10¢40¢10¢25¢**

**Nicholson (X. F.) Files.....25¢**

**Nicholson's Royal Files (Seconds).....75¢**

**Extra prices on certain sizes**

**G. & H. Barnett (Black Diamond).....60¢10¢60¢10¢25¢**

**Fuse—Dis. 12 1/2¢. \$1000 ft**  
 Common Hemp Fuse, for dry ground, \$2.70  
 Common Cotton Fuse, for dry ground, 2.50  
 Single Taped Fuse, for wet ground, 2.50  
 Double Taped Fuse, for very wet gr., 3.50  
 Triple Taped Fuse, for very wet gr., 3.50  
 Small Gutta Percha Fuse, for water, 7.50  
 Large Gutta Percha Fuse, for water, 12.00

**Gates, Molasses—**

**Stebbin's Pattern.....30¢30¢25¢**

**Stebbin's Genuine.....60¢10¢10¢**

**Stebbin's Tinned Ends.....40¢10¢**

**Chase's Hard Metal.....50¢**

**Smith's.....50¢**

**Lincoln's Pattern.....70¢70¢10¢**

**Weed's.....30¢10¢**

**Boss, per doz:**

**No. 1, 47; No. 2, 48; No. 3, 49; No. 4, \$10.....60¢10¢10¢**

**Gauges.....**

**Marking, Mortise, &c.....60¢10¢**

**Starrett's Surface, Center and Scratch.....30¢10¢**

**Stanley R. & L. Co.'s Butt and Rabbet Gauge.....30¢10¢**

**Wire, Wheeler, Madden & Co.....10¢**

**Wire, Morse's.....30¢**

**Wire, Brown & Sharpe's.....10¢30¢**

**Wire, P. S. & W. Co.....10¢10**

**Gimlets.....**

**Mail and Spike.....50¢10¢25¢**

**"Eureka" Gimlets.....40¢10¢**

**"Diamond" Gimlets.....70¢15.00**

**Double Cut, Shephardson's.....40¢40¢25¢**

**Double Cut, Ives.....60¢60¢25¢**

**Double Cut, Douglass.....40¢10¢**

**Glue.....**

**Le Page's Liquid.....35¢35¢25¢**

**Upton's Liquid.....15¢10¢25¢**

**Improved Process.....35¢35¢25¢**

**Dodd's Liquid Glue.....35¢35¢25¢**

**Glue Pots—See Pots, Glue.**

**Grease, Axle.....**

**Fraser's.....Keg 7 1/2¢, Pail 7 1/2¢**

**Fraser's, in boxes.....70¢10¢**

**Dixon's Everlasting, in bxs.....70¢10¢**

**Dixon's Everlasting.....10¢25¢**

**Lower grades, special brands.....70¢10¢25¢**

**Grindstones.....**

**Small, at factory.....70¢10¢25¢**

**Family, regular list.....60¢**

**Family, Cleveland Stone Co.....30¢**

**Grindstone Fixtures—See Fixtures**

**Grindstone.....**

**Gun Powder—See Powder.**

**Hack Saws—See Saws.**

**Halts, Awt.....**

**Sewing, Brass Fer, per doz \$3.50.....45¢10¢**

**Pat. Sewing, Short, \$1.00 per doz.....50¢10¢**

**Hangers—**

Barn Door, old patterns.....	60¢10¢10¢70¢
Barn Door, New England.....	60¢10¢10¢70¢
Samson Steel Anti-Friction.....	55¢
Orleans Steel.....	55¢
Hamilton Wrought Wood Track.....	65¢
U. S. Wood Track.....	65¢
Champion.....	60¢10¢
Rider and Wooster, Medina Mfg. Co.'s List.....	70¢
Chimax Anti-Friction.....	55¢
Ultax Anti-Friction for Wood Tracks.....	55¢
Smith for Wood Track.....	65¢
Seed's Steel Arm.....	60¢
Challenge, Barn Door.....	60¢
Sterling.....	50¢60¢10¢
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50¢60¢10¢
Overtree.....	50¢60¢10¢
Kidder's.....	40¢10¢50¢
Ross.....	60¢10¢
Best Anti-Friction.....	60¢10¢
Duplex (Wood Track).....	60¢10¢
Terry's Pat., 50¢ per ft. 4 in., \$10.00; 5 in., \$12.00.....	60¢10¢
Terry's Steel Anti-Friction Leader 50¢10¢	
Terry's Steel Anti-Friction Ideal.....	50¢10¢
Cronk's Patent, Steel Covered.....	50¢60¢
Wood Track Iron Clad, 7 ft. 10 in.....	50¢

Carrier Steel Anti-Friction.....	50¢10¢
Architect, 7 set \$6.00.....	30¢
Bellevue.....	30¢10¢
Felix, 7 set \$4.50.....	30¢
Richards.....	50¢60¢10¢
Lane's Standard.....	50¢60¢10¢
Lane's New Standard.....	50¢60¢10¢
Lane's Parlor.....	40¢
Ball Bearing Door Hanger.....	30¢10¢25¢10¢
Warner's Pat.....	30¢10¢20¢10¢10¢
Stearns' Anti-Friction 20¢10¢20¢10¢10¢	
Stearns' Challenge.....	25¢10¢25¢10¢10¢
Pauline.....	40¢60¢10¢
American, 7 set \$6.00.....	30¢10¢
Rider & Wooster, No. 1, 65¢; No. 2, 75¢.....	40¢
Paragon, Nos. 1, 2 and 3.....	40¢10¢
Cincinnati.....	25¢10¢
Paragon, Nos. 6, 6 1/2, 7 and 8.....	30¢10¢
Crescent.....	60¢60¢10¢
Nickel Cast Iron.....	50¢
Nickel Malleable Iron and Steel.....	40¢
Scranton Anti-Friction Single Strap.....	35¢
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45¢
Star.....	40¢10¢40¢10¢
May.....	50¢60¢10¢
Barry, 60¢.....	40¢10¢
Interstate.....	40¢
Magie.....	45¢
Pendulum, Payson's.....	45¢
Moody.....	45¢

**Harness Snaps—See Snaps.****Hatchets—**

American Axe and Tool Co.	
Blood's.....	
Hunt's.....	
Hurd's.....	
Mann's.....	
Peck's.....	
Underhill's.....	40 & 10
Buffalo Hammer Co.....	50¢55¢
Fayette B. Plumb.....	
C. Hammond & Son.....	
Kelly's.....	
Sargent & Co.....	
F. B. & W. Co.....	
Ten Eyck Edge Tool Co.....	
Collins.....	10¢
Schulte, Loboff & Co.....	50¢50¢55¢

**Hay and Straw Knives—See Knives.****Hinges—**

Blind Hinges—	
Parker.....	75¢25¢
Butler.....	50¢
Clark's, Nos. 1, 3, 5, 40 and 50.....	75¢10¢85¢90¢
Clark's Mortise Gravity.....	60¢
Sargent's Nos. 1, 3, 5, 11, 13.....	75¢10¢55¢10¢55¢
Sargent's, No. 12.....	77¢10¢10¢
Reading's Gravity.....	75¢10¢75¢10¢55¢
Shepard's.....	75¢10¢
Noiseless.....	75¢10¢
Niagara.....	80¢
Buffalo.....	80¢
Clark's Genuine Pattern.....	80¢
O. S. Lull & Porter.....	75¢10¢
Acme, Lull & Porter.....	75¢10¢
Queen City Reversible.....	70¢10¢85¢75¢
Clark's Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....	75¢10¢25¢
North's Automatic Blind Hinges, No. 1, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10¢
Gate Hinges—	
Western.....	75¢40¢, 60¢
M. E.....	75¢70¢, 55¢
M. E. Reversible.....	75¢40¢, 55¢10¢
Clark's, Nos. 1, 2, 3.....	60¢10¢55¢
M. Y. State.....	75¢40¢, 55¢10¢
Automatic.....	75¢40¢, 55¢
Shepard's.....	60¢10¢25¢

Spring Hinges—	
Geer's Spring and Blank Butts.....	40¢
Union Spring Hinge Co.'s List, March 1886.....	35¢
Barker's Double Acting.....	25¢
Union Mfg. Co.....	25¢
Bommer's.....	25¢
Buckman's.....	15¢20¢
Chicago.....	30¢
Bardsley's Patent.....	40¢
Acme.....	30¢
U. S.....	25¢10¢
Empire and Crown.....	20¢
Hero and Monarch.....	20¢
American, Gem, and Star.....	20¢
Oxford.....	20¢
Wiles'.....	10¢
Devore's.....	40¢
Beck.....	40¢
Royal.....	40¢
Reliable.....	40¢
Champion.....	60¢
Stearns'.....	50¢10¢
Samson, 7 cross.....	\$14.00

**Wrought Iron Hinges.**

List February 14, 1891.

Tap and T.....60¢10¢55¢10¢55¢

Corrugated Strap & T.....	50¢50¢10¢
Screw Hook and Strap.....	10 to 12 in., 5¢ 14 to 20 in., 5¢3/4 22 to 30 in., 5¢
Screw Hook and Eye.....	1/2 in., 5¢ 3/4 in., 5¢3/4 1 in., 5¢
Rolled Blind Hinges, Nos. 33 and 34.....	50¢10¢
Rolled Blind Hinges, Nos. 33 and 34.....	50¢10¢
Rolled Plate.....	55¢10¢
Rolled Raised.....	70¢10¢
Plate Hinges 1/2, 10 & 12 in., 5¢ "Providence" over 12 in., 5¢	

Hoes—	
Eye—	
D. & H. Scovill.....	30¢
Lane's Crescent Planter Pattern.....	45¢55¢
Maynard, S. & O. Pat.....	45¢55¢
Sandusky Tool Co., S. & O. Pat.....	70¢70¢
Am. Axe and Tool Co., S. & O.....	5¢
Chattanooga Tool Co., S. & O. Pat.....	50¢60¢10¢
Grub.....	60¢10¢

Handled—	
Garden, Mortar, &c.....	70¢
Planter's, Cotton &c.....	70¢
Warren Hoe.....	60¢
Magie.....	75¢40¢

**Hog Rings and Hinges—See Rings and Hinges.****Hoisting Apparatus—See Machines, Hoisting.****Hollow Ware—See Ware, Hollow.****Holders.**

Bag—	
Sprengle's Pat.....	75¢40¢15¢
Bit—	
Extension.....	75¢40¢15¢
Barber's.....	75¢40¢15¢
Fres, 75¢.....	60¢55¢60¢10¢
Diagonal.....	75¢40¢15¢
Angular.....	75¢40¢15¢
File and Tool—	
Bals Pat.....	75¢40¢15¢
Nicholson File Holders.....	30¢
Dick's Tool Holder.....	30¢

**Hooks—**

Cast Iron—	
Bird Cage, Sargent's List.....	60¢10¢10¢
Bird Cage, Reading List.....	60¢10¢10¢
Clothes Line, Sargent's List.....	60¢10¢10¢
Clothes Line, Reading List.....	60¢10¢10¢
Ceiling Sargent's List.....	55¢10¢10¢
Harness, Reading List.....	55¢10¢55¢10¢10¢
Coat and Hat, Sargent's List.....	55¢10¢60¢10¢
Coat and Hat, Reading.....	50¢10¢50¢10¢10¢

**Wrought Iron—**

Cotton.....	75¢40¢15¢
Cotton Pat. (N. Y. Mallet & Handle Wks.).....	30¢
Tassel and Picture (T. & S. Mfg. Co.).....	30¢
Wrought Staples, Hooks, &c.....	See Wrought Goods.
Wire—	
Wire Coat and Hat, Gem, List April, 1886.....	50¢60¢10¢
Wire Coat and Hat, Mills, List April, 1886.....	50¢50¢10¢
Indestructible Coat and Hat.....	45¢45¢55¢
Wire Coat and Hat, Standard.....	60¢10¢10¢
Handy Hat and Coat.....	50¢10¢60¢
Steady Ceiling Hooks.....	50¢10¢60¢
Beit.....	60¢60¢10¢
Atlas, Coat and Hat.....	50¢60¢10¢
Bright Wire Goods, see Wire.	

**Miscellaneous.**

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50 Noll's Grass.....	75¢40¢25¢
Bush.....	55¢60¢
Whiffletree—Patent.....	55¢
Hooks and Eyes—Malleable Iron.....	70¢70¢10¢
Fish Hooks, American.....	60¢10¢10¢
Bench Hooks.....	See Bench Stops.

**Horse Nails—See Nails, Horse.****Horse Shoes—See Shoes, Horse.****Hose, Rubber—**

Competition.....	75¢75¢10¢25¢
Standard.....	60¢10¢10¢70¢10¢
Kextra.....	60¢60¢10¢
N. Y. B. & P. Co., Para.....	25¢25¢
N. Y. B. & P. Co., Extra.....	40¢40¢25¢
N. Y. B. & P. Co., Dundee.....	50¢210¢60¢

**Huskers—**

Blair's Adjustable.....	75¢75¢
Blair's Adjustable Clipper.....	75¢75¢
Hubbard's Solid Steel.....	75¢75¢

**Indurated Fiber Ware—See Ware, Indurated Fiber.****Irons.**

Sad—	
From 4 to 10, at factory.....	75¢100¢
Self-Heating.....	75¢40¢25¢
Self-Heating, "Patent".....	75¢40¢25¢
Mrs. Pott's Irons.....	60¢60¢10¢
Enterprise Star Irons.....	60¢60¢10¢
XX Cold Handle Sad Iron.....	60¢60¢10¢
Ideal Irons new List.....	50¢10¢50¢10¢10¢
Salamander, Irons.....	25¢
B. B. Sad Irons.....	30¢30¢
Combined Fluter and Sad Iron.....	15¢
Fox Reversible, Self-Fluter.....	75¢40¢25¢
Chinese Laundry (N. E. Butt Co.).....	15¢
New England.....	60¢10¢
Mahony's Troy Pol. Irons.....	25¢
Sensible, List Jan. 91.....	50¢10¢55¢
Sensible Tailor's Iron.....	35¢
National Self-Heating.....	30¢

**Soldering—**

Soldering Coppers.....	75¢19¢21¢
Cover's Adjustable, List Jan. 1, 1886.....	35¢25¢

**Irons, Pinking, per doz., 55¢.****Jack Screws—See Screws.****Jacks, Wagen.**

Daisy.....	35¢45¢
Victor.....	35¢45¢
Lockport.....	40¢

**Kettles—**

Brass, Spun, Plain, List Jan. 1, '91.....	25¢55¢
Brass, Spun, Pld. W. M. List Jan. 1, '91.....	20¢
Enamelled and Tea—See Hollow Ware.	

**Keys—**

Look Ass'n List Dec. 30, 1886.....	50¢10¢
Eagle, Cabinet, &c.....	60¢25¢
Hotchkiss' Brass Blanks.....	40¢
Hotchkiss' Copper and Tinned.....	40¢
Hotchkiss' Pad, and Cab.....	35¢
Hotchkiss' Bed Keys.....	75¢40¢, 15¢
Wollensak Tinned.....	50¢10¢

**Knife Sharpeners—See Sharpeners, Knife.****Knives.**

Butcher, Shos, &c—	
Wilson's Butcher Knives, List Dec. 8, 1890.....	25¢
Ames' Butcher Knives.....	25¢
Foster Bros. Butcher, &c.....	40¢
Jordan's A. A. L., Butchers, List.....	40¢
Nichols' Butcher Knives.....	40¢10¢
W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.80, &c.....	40¢10¢
Ames' Shoe Knives.....	30¢25¢
Ames' Bread Knives.....	75¢40¢15¢
Moran's Shoe and Bread.....	30¢
Hay and Straw.....	See Hay Knives.
Table and Pocket.....	See Cutlery.
Corn, Auburn Mfg. Co. Western Pat.....	25¢
Corn, Auburn Mfg. Co. Crescent.....	35¢
Bradley's.....	10¢
Wadsworth's.....	25¢
Witherby.....	25¢
P. S. & W.....	75¢40¢15¢
Mix.....	75¢40¢15¢
New Haven.....	75¢40¢15¢
Merrill.....	60¢10¢60¢10¢25¢
Douglas.....	75¢75¢25¢
Watson.....	15¢10¢25¢
L. & J. White.....	50¢55¢
Bradley's.....	35¢
Adjustable Handle.....	35¢35¢
Wilkinson's Folding.....	25¢25¢25¢

**Hay and Straw—**

Lighting from jobbers.....	\$5.00 & \$9.00
Wadsworth's.....	40¢75¢40¢10¢
Carters' Needle.....	75¢40¢11.50
Heath's.....	75¢40¢11.50
Auburn Hay, Com. and Spear Point.....	50¢
Auburn Straw.....	40¢
Noll's Hay.....	75¢40¢15¢

**Mining.**

Am. (3d quality), 7 gr., 1 blade, \$7; 2 blades, \$12; 3 blades, \$18.....	See List.
Lothrop's.....	30¢10¢
Smith's, 75¢ doz, Single, \$2.00; Double, \$3. 40¢45¢	
Knapp & Cowles.....	50¢10¢60¢
Buffalo Adjustable.....	75¢40¢25¢
Buffalo Double Adjustable.....	75¢40¢25¢

**Knobs—**

Door Mineral.....	60¢60¢
Door Por. Jap'd.....	70¢75¢
Door Por. Nickel.....	30¢60¢25¢
Door Por. Plated, Nickel.....	35¢60¢25¢
Drawers, Porcelain.....	60¢10¢60¢10¢
Hemlock Door Knobs.....	40¢10¢55¢
Yale & Towne Wood, List Dec., 1885.....	40¢
Furniture, Plain.....	75¢40¢10¢
Furniture, Wood Screws.....	35¢10¢
Base, Rubber Tip.....	70¢10¢25¢
Picture, Jap'd.....	60¢10¢10¢70¢
Picture, Sargent's.....	70¢10¢
Picture, Hemlock.....	35¢25¢
Shutter, Porcelain.....	65¢10¢
Carriage, Jap.....	75¢40¢, 60¢10¢
Bardsley's Wood Door, Shutter, &c.....	40¢

**Ladies—**

Melting, Sargent's.....	55¢10¢
Melting, Reading.....	35¢10¢
Melting, Monroe's Pat.....	75¢40¢, 40¢
Melting, P. S. & W.....	35¢10¢40¢
Melting, Warner's.....	80¢

**Lanterns—**

Tabular—	
Plain with Guards, 75¢ doz.....	\$3.75 & 4.00
Lift Wire, with Guards.....	\$4.00 & 4.25
Square Plain, with Guards.....	\$3.75 & 4.00
Sq. Lift Wire, with Guards.....	\$4.00
Police Lanterns (including packages). 2 1/2-inch Bull's-eye Police regular.....	75¢40¢
3-inch Bull's-eye Police regular.....	75¢40¢
2 1/2-inch Bull's-eye Police flash light.....	75¢40¢
3-inch Bull's-eye Police flash light.....	75¢40¢

**Lawn Mowers—See Mowers, Lawn.****Leaders, Cattle.**

Hudson, Beckley & Co.'s.....	70¢
Sargent's.....	60¢10¢
Hotchkiss.....	30¢
Peck, Stow & W. Co.....	60¢10¢

**Lemon Squeezers—See Squeezers, Lemon.****Lifters, Transom.**

Wollensak's.....	50¢
Class 3 and 4, Bronzed Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Reith's, List Feb. 20, 1891.....	50¢10¢10¢25¢
Bronzed Iron Rods.....	50¢10¢10¢25¢
Brass, Real Bronze or Nickel Plated.....	30¢
Excelsior.....	50¢10¢
Shaw's.....	50¢10¢
Payson's.....	60¢
Imperial.....	50¢10¢

**Lines—**

Cotton and Linen Fish, Draper's.....	50¢
Draper's and Tate's Chalk.....	60¢
Draper's Mason's Linen, 84 ft., No. 1, \$1.00; No. 2, \$1.75; No. 3, \$2.50; No. 4, \$3.75; No. 5, \$5.00.....	25¢
Cotton Chalk.....	55¢
Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50; No. 5, \$3.00; No. 6, \$3.50; No. 7, \$4.00; No. 8, \$4.50; No. 9, \$5.00; No. 10, \$5.50; No. 11, \$6.00; No. 12, \$6.50; No. 13, \$7.00; No. 14, \$7.50; No. 15, \$8.00; No. 16, \$8.50; No. 17, \$9.00; No. 18, \$9.50; No. 19, \$10.00; No. 20, \$10.50; No. 21, \$11.00; No. 22, \$11.50; No. 23, \$12.00; No. 24, \$12.50; No. 25, \$13.00; No. 26, \$13.50; No. 27, \$14.00; No. 28, \$14.50; No. 29, \$15.00; No. 30, \$15.50; No. 31, \$16.00; No. 32, \$16.50; No. 33, \$17.00; No. 34, \$17.50; No. 35, \$18.	



**Punches—**

**Punches—**  
 Saddlers' or Drive,  $\$$  doz.  $\$60.00$  654  
 Bemis & Call Co.'s Cast Steel Drive. 504 24  
 Bemis & Call Co.'s Springfield Socket 504 24  
 Spring, good quality  $\$$  doz.  $\$50.00$  154  
 Spring, 1 inch, Pat. 154  
 Bemis & Call Co.'s Spring and Choke 404  
 Solid Timmers' P.S. & W. Co.  $\$$  doz. 144 554  
 Timmers' HoJow Punches P.S. & W. Co. 304 24  
 Rice Hand 1 inches 154  
 Avery's Revolving 404  
 Avery's Saw-Set and Punch. See Saw Sets

**Solid Tinner's,  
Tin's' Howlow**

**Rail--**

Sliding Door, Wrt Brass, 4x8 35¢.....	15¢
Sliding Door, Painted Wood Iron.....	15¢

Sliding Door, I

Sliding Door, Bron. Red w/ 10 ft. R. ... \$4.75  
Sliding Door, Iron, Painted, 7 ft. ... \$4.40  
Barn Door Light. In. ... \$4.00  
Per 100 feet ... \$2.00 2.50 3.10, 10%  
B. D. for N. E. Hangers—  
Small. Med. Large.  
Per 100 set ... \$2.15 3.70 4.85  
Terry's Steel Rail, 7 ft. ... \$4.00  
Victor Track Rail, 7 ft. ... \$4.00  
Carrier, double braced Steel Rail, 7 ft. ... \$4.00

foot ...  
Moore's Wren

Moore's Wrought Iron.....	40¢/lb
Moody Steel Rail.....	45¢
<b>Makes—</b>	
Cast Steel, Association goods.....	60¢/70¢
Cast Steel, outside g'ds.....	60¢/10¢/10¢/85¢
Malleable.....	70¢/70¢/85¢
Gibbs Lawn Rake.....	1¢ doz \$1.90
Canton Lawn Rake.....	2¢ doz \$2.75

Favorite Lawn  
St. Madison B.

Favorite Lawn Rake.....	7 doz \$4.40
Ft. Madison Frise Bow Brace and Feet	
less .....	
Fort Madison Steel Tooth Lawn Rake,	
\$6.00. ....	
<b>Razors—</b>	
J. R. Torrey Razor Co .....	30¢
Wostenholme and Butcher, \$10 to \$..	10¢
Jordan's AAAA new flat .....	10¢

**Jordan's Old F**  
**Belmont**

Jordan's Old Faithful, new list.....	260
Galvanic .....	7 doz \$15.00
Electric Cultery Co .....	Net
<b>Razor Straps—See Straps, Razor.</b>	
<b>Rings and Ringers.</b>	
<b>Bull Rings—</b>	
Union Nut Co.....	500
Sargent's.....	604 210 70 25
Hogchises, low Net .....	200

Humason, Bec

Humason, Beckley & Co.'s.....	70¢10¢
Peck, Stow & W. Co's.....	50¢10¢50¢10¢
Elkhart Hdw. Co., White Metal, low list.....	50¢50¢10¢

*Hog—*

Top of the Hill Ringers.....	W dom \$2.00
Top of the Hill Rings.....	W dom \$1.25
Hill's Improved Ringers.....	W dom \$1.25
Hill's Old Style Ringers.....	W dom \$1.12½

Kill's Tongue...

Hill's Tones.....	dos	\$3.00
Hill's Rings.....	dos	bxs \$1.00
Perfect Rings.....	dos	bxs \$1.50
Perfect Rings.....	dos	\$2.15
Blair's Hog Rings.....	dos	\$3.00
Blair's Hog Rings.....	dos	\$1.00
Champion Rings.....	dos	\$2.00
Champion Rings, Double.....	dos	\$2.25
Brown's Rings.....	dos	\$2.00

**Brown's Rings**

Brown's Rings.....	7	dos \$1.15	1.25
Electric Hog Rings ...	7	dos boxes	\$1.50
Electric Hog Rings .....	7	dos	\$2.00
Major Rings .....	7	cos	\$1.25
Major Rings.....	7	dos	\$2.00

**Kivits and Surrs—**

Iron. List Nov. 17, '87.....	40%
Copper.....	60 to 10%
Coppered Iron. Bettina Brand .....	40%

## Rivet Sets

Rivet Sets—See Sets.	
<b>Rods—</b>	
Stair, Brass.....	55c25
Stair, Black Walnut.....	7 doz 40¢
<b>Rollers—</b>	
Barn Door, Sargent's List.....	60&10&105
Acme Moore's Anti-Friction.....	55¢
Union Barn Door to Now.....	75¢
Thompson Mfg. Co.'s Lawn Rollers.....	30¢

Hope.

Manila, 7-16 in. diam. and larger	134
Manila, 4 in.	129
Manila, 1/2 and 5-16 in.	131
Manila, Tarred Rope	118
Manila, Hay Rope	120
Sisal, 7-16 inch and larger	104
Sisal, 3/4 in.	105
Sisal, 1/2 and 5-16 in.	103

### Hay Rope

Sisal, Hay Rope.....	103
Sisal, Tarred Rope.....	94
Sisal, Medium Lath Yarn.....	94
New Zealand...-16 in. & larger.....	84
New Zealand..... 4 inch.....	84
New Zealand... 4 and 5-16 inch.....	94
New Zealand, Hay Rope.....	84
New Zealand, Tarred Rope.....	84

Note.—Manufacturers' prices.

7 2 less, f.o.

100 lb. of less, f.o.b. factory—less 1 1/4 % for cash	
Cotton Rope.....	\$ 13 1/4 @ 160
Jute Rope.....	\$ 6 1/2 @ 70
Wire—	
List February, 1902.	
A l kinds.....	45%
Rules—	
Boxwood.....	80 @ 10 @ 10%

ory .....  
... ..

Ivory	50c
Starrett's Rules and Straight Edges,	50c
Steel	25c
<b>Sad Irons—See Irons, Sad.</b>	
<b>Sand and Emery Paper and</b>	
<b>Cloth—See Paper and Cloth, Sand</b>	
<b>and Emery</b>	
<b>Sash Cord—See Cord, Sash</b>	

**Sash Locks**

Sash Locks—See Locks, Sash.  
Sash Weights—See Weights, Sash.  
Sausage Stuffers or Fillers—  
See Stuffers or Fillers, Sausage.  
Saws—The following prices are  
often cut by jobbers.

Disston's Circular .....	45¢	45¢	55¢
Disston's Cross Cut .....	45¢	45¢	55¢
Disston's Band .....	20¢		

Woodrough & N

Woodrough & McFarlin.

Hand, Panel and Rip.....	25c-25c5
Narrow Champion Cross Cuts with Handles, 7 foot.....	18c-30c
Champion Thin Back Cross Cuts, 7 foot.....	26c-33c
Champion Extra Thin Back Cross Cuts, 7 foot.....	29c-31c
Champion Chernie Cross Cuts.....	25c-30c

foot.....

1/2" foot.....\$7.40  
 Wheeler, Madden & Clemson Mfg. Co.  
 Hand, Panel and Rip. ....\$3.25  
 Narrow Champion Cross Cuts with  
 Handles, 1/2 foot.....18.20  
 Champion Thin Back Cross Cuts, 1/2  
 foot.....20.25  
 Champion Extra Thin Back Cross  
 Cuts, 1/2 foot.....

the Man Charn;

One Man Champion Cross Cuts, 8 ft.. 37







